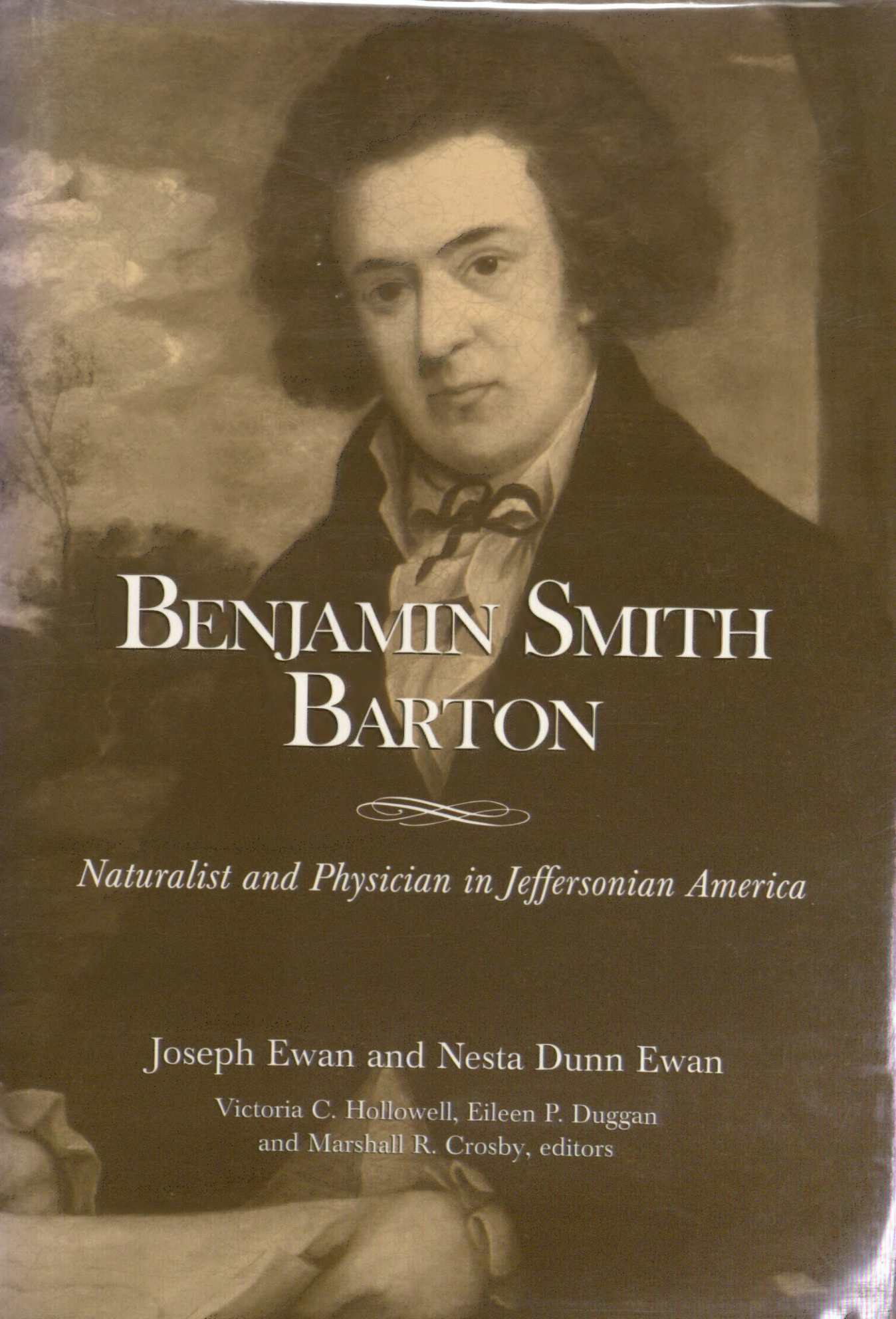


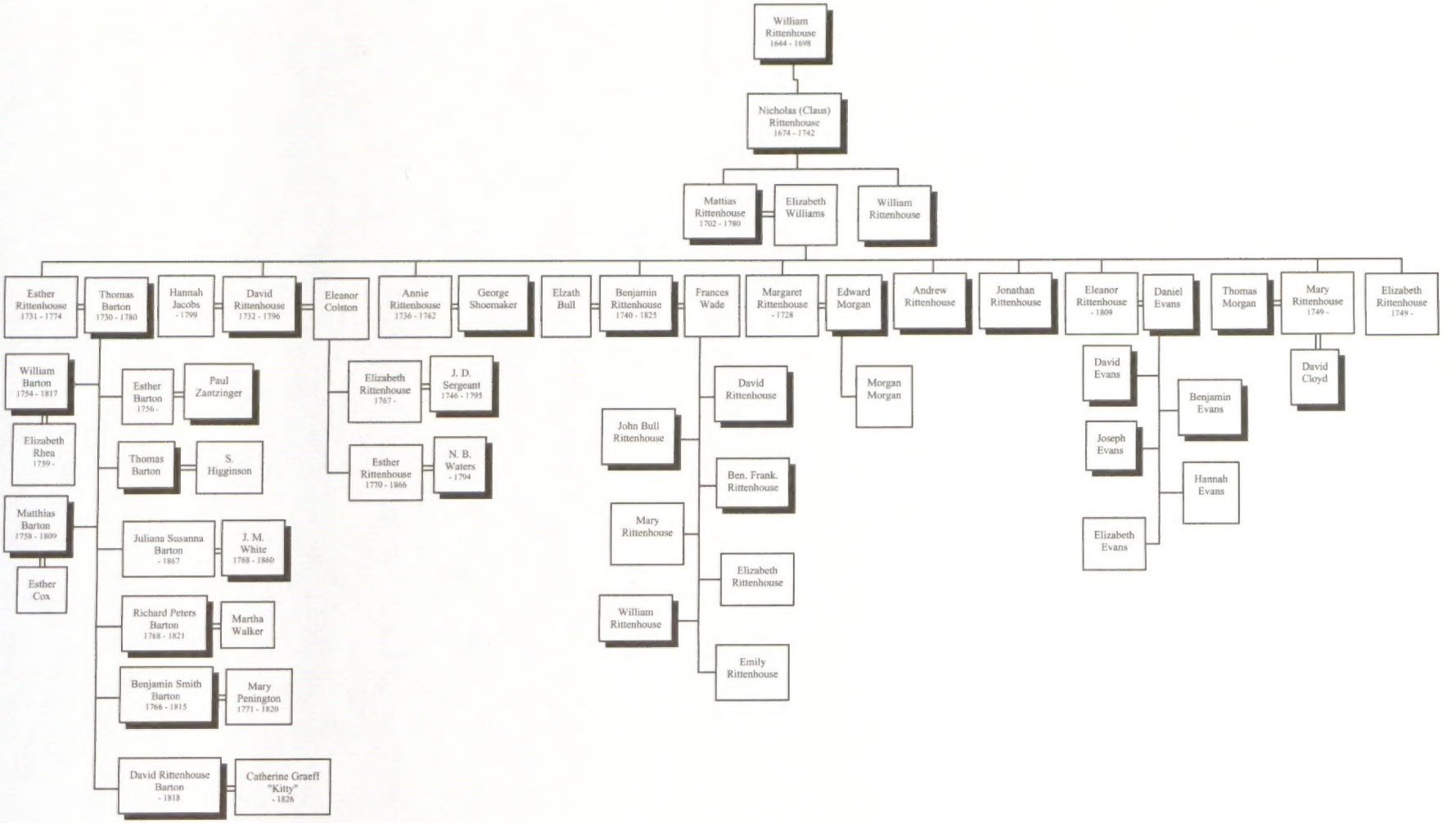
Benjamin Smith Barton

Naturalist and Physician in Jeffersonian America

Joseph Ewan and Nesta Dunn Ewan

Victoria C. Hollowell, Eileen P. Duggan
and Marshall R. Crosby, editors

Descendants of William Rittenhouse

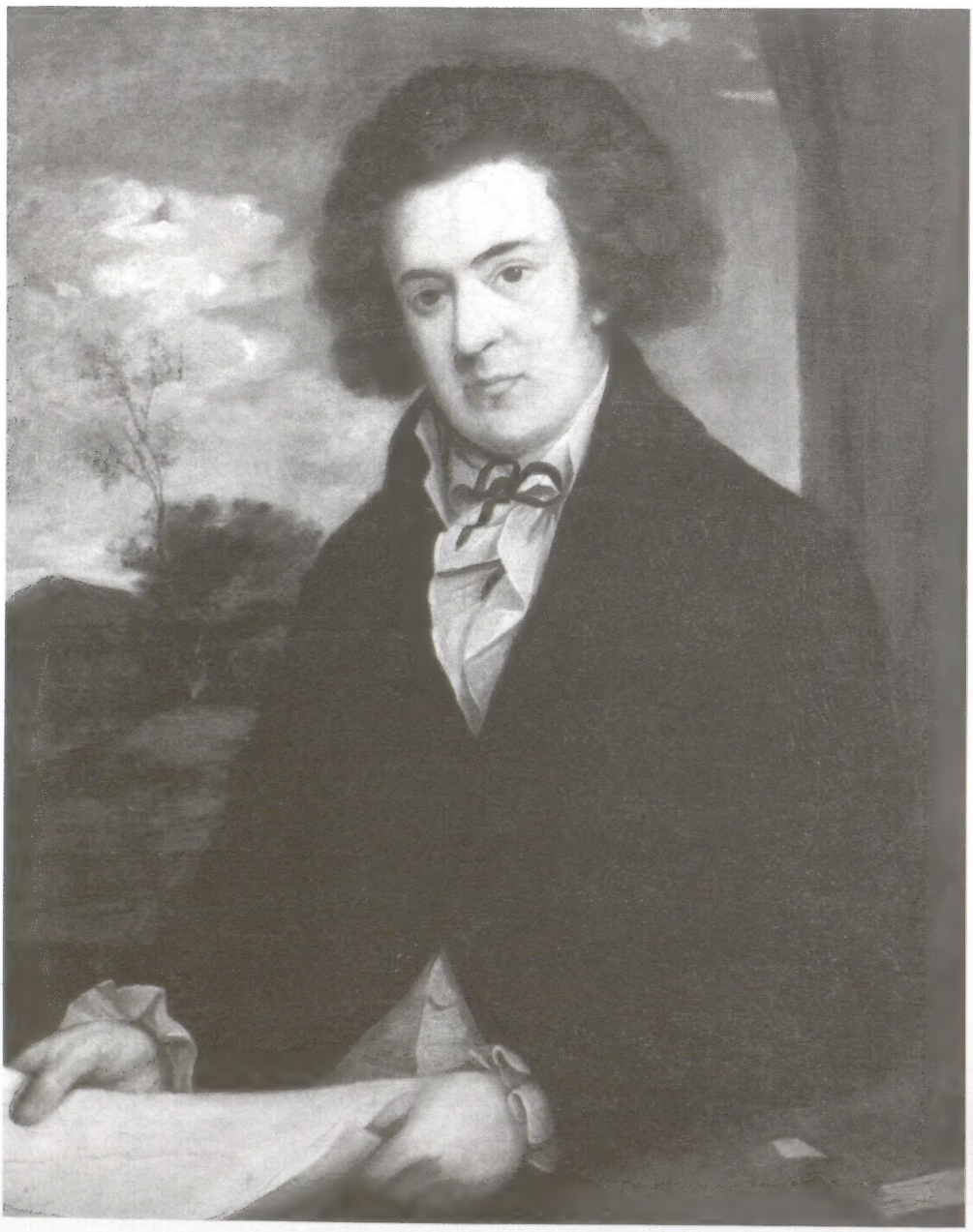


Descendants of John Barton

John Barton 1653 - 1717
Richard Barton 1706 - 1781
William Barton
Esther Rittenhouse 1731 - 1774
Thomas Barton 1730 - 1780
Sarah De Normandie
William Barton 1754 - 1817
Elizabeth Rhea 1759 -
Esther Barton 1756 -
Paul Zantzinger
Thomas Barton
S. Higginson
Juliana Susanna Barton - 1867
J. M. White 1768 - 1860
Matthias Barton 1758 - 1809
Esther Cox
Richard Peters Barton 1768 - 1821
Martha Walker
Benjamin Smith Barton 1766 - 1815
Mary Penington 1771 - 1820
David Rittenhouse Barton - 1818
Catherine Graeff "Kitty" - 1826
Anne Frazer 1807 - 1837
John Rhea Barton 1796 - 1871
Susan Ridgway
Thomas W. Barton - 1818
Charles B. Barton - 1811
Elizabeth Sophia Barton
Susanna Juliana Barton
Nancy Barton
William Paul (Crillon) Barton 1786 - 1856
Esther R. Sergeant 1793 - 1866
Mary Rhea Barton
Hetty Ann Barton
Esther Maria Zantzinger 1774 - 1775
Thomas Barton Zantzinger 1776 -
Mary Zantzinger 1777 - 1821
Esther Sophia Zantzinger 1779 -
Sarah Barton Zantzinger 1778 -
Franklin Davenport
Juliana Elizabeth Zantzinger 1781 - 1854
Robert G. Johnson
Harriet Ann Zantzinger 1783 - 1783
Harriet Rennette Zantzinger 1784 - 1856
William Paul Zantzinger 1786 -
Caroline Amelia Zantzinger 1787 -
Henry Richard Zantzinger 1789 -
Henry David Zantzinger 1791 -
Richard Augustus Zantzinger 1792 -
John Paul Zantzinger 1794 - 1821
Caroline Amelia Zantzinger 1795 - 1795
Caroline Catherine Zantzinger 1799 -
Esther Barton
George Barton
? Davis
Juliana Barton
Esther W. "Hetty" White - 1809
Elizabeth W. White
Richard W. Barton - 1859
Thomas Walker Barton 1800 - 1863
Daniel Walker Barton 1801 - 1863
Robert Rittenhouse Barton 1792 - 1858
William Matthias Barton
David Walker Barton 1801 - 1863
Juliana Barton
Sarah Barton 1799 - 1817
Thomas Pennant Barton 1803 - 1869
Cora Livingston 1806 - 1873
Esther Rittenhouse Barton
Edmund Hill Barton
Edward Hall Barton
Mary Barton
Mary Graeff Barton
John Graeff Barton
Catherine Amelia Barton
George Washington Barton

Benjamin Smith Barton

Naturalist and Physician in Jeffersonian America



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Benjamin Smith Barton

Naturalist and Physician in Jeffersonian America

Written by
Joseph Ewan and Nesta Dunn Ewan

Edited by
Victoria C. Hollowell
Eileen P. Duggan
Marshall R. Crosby

Missouri Botanical Garden

The Academy of Natural Sciences
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Missouri Botanical
Garden Library

Benjamin Smith Barton

Naturalist and Physician in Jeffersonian America

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Managing Editor: Beth Parada
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Table of Contents

Foreword vi
Editor's Foreword vi
Preface vii
Introduction xi
A Barton Chronology xxi
Chapter I: Antecedents and Contemporaries 1
Chapter II: Youth 59
Chapter III: Edinburgh: Mecca for American Pupils 79
Chapter IV: Edinburgh II 95
Chapter V: Philadelphia 137
Chapter VI: Progress 161
Chapter VII: Confrontation 203
Chapter VIII: *New Views of the Origin of the Tribes and Nations of America* 235
Chapter IX: Becoming a Naturalist 273
Chapter X: Members of the American Philosophical Society 299
Chapter XI: British Correspondents 325
Chapter XII: Continental and Latin American Correspondents 369
Chapter XIII: America's First Textbook of Botany 405
Chapter XIV: Biogeography, Humboldt, and Economic Botany 431
Chapter XV: Building Bridges Between Medicine and the Natural World 457
Chapter XVI: Toward a *Flora Americana* 481
Chapter XVII: Barton's Protégés 501
Chapter XVIII: *Hortus Vivus:* The Search for Seeds for Barton's Botanic Garden 553
Chapter XIX: *Hortus Siccus:* Barton's Efforts to Build a Herbarium 567
Chapter XX: Irons in the Fire 603
Chapter XXI: Concerning Geology, New Madrid, and Mineralogy 639
Chapter XXII: *Elements of Zoology* 659
Chapter XXIII: Amphibians, Reptiles, and Fishes 683
Chapter XXIV: Birds 713
Chapter XXV: Mammals 743
Chapter XXVI: Professor of the Theory and Practice of Medicine 779
Chapter XXVII: Barton's Favored Pupils 787
Chapter XXVIII: Returning to Europe 813
Chapter XXIX: Home 831
Chapter XXX: Debts and Due 847
Chapter XXXI: Conclusions 861
Appendix I: Bibliography of Barton's Writings 875
Appendix II: Roster of Barton's Medical Pupils 919
Appendix III: Genealogy 935
References 941
Figures 973
Index of Flora 1069
Index of Fauna 1095
Index of People 1113

Foreword

This book is a remarkable achievement: it represents the scholarly capstone to the careers of Joseph and Nesta Dunn Ewan. Working together for more than 60 years, the Ewans authored more than 440 publications in natural history and botany. During the last ten years of their career, which were spent working at the Missouri Botanical Garden, Joseph and Nesta had a particular interest in the American naturalist Benjamin Smith Barton. What influences shaped his science? Who were his family, students, and professional colleagues? Barton's far-flung correspondence was remarkable in Jeffersonian America. His desk existed as the pivotal clearinghouse for countless plant and animal discoveries as the American continent opened to exploration.

The scholarly library of Joseph and Nesta Dunn Ewan that underlies this Barton project is now archived in the permanent collections at the Missouri Botanical Garden Library. No less essential were the resources and staff of the American Philosophical Society and the Academy of Natural Sciences in Philadelphia.

It is our great pleasure to herald this final project of Joseph and Nesta's lifelong devotion to the natural sciences.

– Dr. Peter H. Raven and Douglas Holland
Missouri Botanical Garden

Editor's Foreword

Joseph Ewan was born in Philadelphia on October 24, 1909. He graduated from the University of California at Berkeley in 1934 and served as research assistant to Willis Linn Jepson in graduate school. Joseph taught at the University of Colorado from 1937–1944 and then worked as a botanist in Colombia, at the Smithsonian Institution, and at the USDA, before a professorship at Tulane University in New Orleans (1947–1977).

Ada Nesta Dunn was born on November 8, 1908, in Saskatchewan, Canada. She received her degree in botany from the University of California at Los Angeles, where she met Joseph in 1928. Joseph and Nesta were engaged in 1933 and married in 1935. Nesta was frequently praised in correspondence from Joseph, noting her contributions to the research, writing, and editing of their mutual scholarship.

Joseph and Nesta Ewan were the authors of more than 400 books, reviews, and essays on natural history, botany, biogeography, and plant taxonomy. When, in 1986, the Missouri Botanical Garden purchased the ca. 5000-volume Ewan library, Joseph and Nesta agreed to curate the collection. Upon arrival at the Garden, the Ewans wasted no time in making their mark on everyone they met, establishing a weekly gathering where, over tea and cookies, visitors and staff would debate the merits of various historical and literary works. Through everything, they were an inseparable team, and it is only appropriate that when they received the Henry Shaw Medal from the Missouri Botanical Garden in 1994, it was a joint award.

Preface

"The greatest part of a writer's time is spent in reading, in order to write; a man will turn over half a library to make one book."
—Samuel Johnson in 1775

Our aim in this source book for the era is to place the first professional naturalist in our young nation, Benjamin Smith Barton, in proper perspective; to give the scope of his endeavors; and to record his influence on so many medical students, some of them physicians whom history has treated more kindly than their mentor. Current interest in genetic inheritance lead us to consider Barton's family and its Rittenhouse connection.

Barton was a teacher of at least 181 medical pupils—with many more attending his lectures on botany and medicine. He was also author of more than 200 titles—more than 180 published and others unpublished or incomplete at the time of his death. The several editions of his *Elements of Botany* represented the first botany textbooks in America. His work often remained in manuscript form, due to the frustration of lack of financial backing in a country recovering from war and interested more in history and religion than in the sciences. Most of Barton's professional life was involved in attempts to pay off debts, accumulated during his sojourn at the University of Edinburgh and from his purchase of natural history classics, tools for what he planned would be his Natural History of America. Several of his publications were editions of the works of others with copious notes of his own to adapt the works to America. He hoped these would bring the financial return his own *Proposals* had failed to do.

Barton's wide correspondence in this country and abroad confirms his success in involving citizens from many walks of life to send him their observations of phenomena. His notable library, linking the knowledge of the Old World with the discoveries of the New, enriched the researches of his pupils. Favored colleagues, William Bartram nearby, Pursh and Nuttall, and others as far away as Massachusetts, Georgia, Ohio, and Illinois, were loaned books. Meriwether Lewis took a copy of Du Pratz's *The History of Louisiana* (London, 1774) to the Pacific and back.

Barton papers that were stowed away in the attic in a little red trunk Barton had taken to Europe and that were later kept by his daughter-in-law, Cora Livingston Barton, were discovered in 1930 by Mrs. Violetta Delafield (Mrs. John R. Delafield) at Montgomery Place on the Hudson River.[1] Mrs. Delafield exhibited many of the drawings before the Garden Clubs of America, and Eugene Delafield later attempted a book on the material, which came to naught. Botanist Francis Pennell of the Academy of Natural Sciences, Philadelphia, was permitted to study portions.[2] It was Dr. Pennell who first drew our attention to the rich store of Barton papers. We cherish his memory.

In 1948 Dr. William E. Lingelbach of the American Philosophical Society tried unsuccessfully to have the materials donated to the Society of which Barton had so long been an active officer. In the late 1960s the Society, through its librarian Dr. Whitfield J. Bell, Jr.,

---

1 Before her marriage, Violetta S. White (1875-1948) was engaged in the study of Gasteromycetes (puffballs, etc.) with L. M. Underwood at the New York Botanical Garden, her two papers appearing in *Bull. Torrey Bot. Club* (1901-1902). After her marriage, she was active in garden clubs. Geraldine Kaye, "Violetta S. White: a mycologist who got away," *Boston Mycol. Club Bull.* 39 no. 2 (June 1984): 10-11; and Nancy Slack in *Uneasy Careers and intimate Lives, Women in Science 1789-1979*, ed. by Pnina G. Abir-Am & Dorinda W. Rossiter, eds. (New Brunswick, N.J., 1987), 83, 301, fns. 16, 17.

2 See *Bartonia* 18 (1936): 3.

was able to take advantage of an opportunity to acquire the collection from General John R. Delafield, to be delivered in parts over the years. "With a special appropriation by the Council and Finance Committee of the Society, the papers were acquired in June 1970."

A careful, general sorting and ordering of materials was begun by Murphy D. Smith. The Penrose Contingent Fund in 1971 made possible a more detailed analysis of the Ewans papers, and plans were made for a biography of Benjamin Smith Barton and his works. There are over a thousand letters to Barton, many from pupils who attained fame; drafts of about 200 letters by Barton to Americans and Europeans; several thousand manuscripts, ranging from scraps to his six personal journals and notebooks; and 348 drawings, engravings, etc., including those by Barton, William Bartram (79), Turpin (50), Pursh (27), and others.[3]

We emulate Allan Nevins, historian of Americana, who cautioned "be then-minded, not now-minded" and strive to "dissipate the fog of old prejudices."

Editorial Notes

Letters, journals, and other sundry items are quoted as written, a picture of the times and of what readers had to contend with, with capitals and underlines used, as then, for emphasis. An exception: elevated letters have been lowered. An asterisk indicates an unconfirmed literature (non-taxonomic) reference. Square brackets indicate editorial additions or elaborations of possibly unfamiliar words.

Scientific names cited by Barton or his correspondents are left as written. Our modern identifications are italicized in the present day manner. Scientific names appearing in square brackets or within footnotes represent later editorial insertions.

Copies of Barton's open letters addressed to prominent persons, or letters to him that were published but not returned by the publisher or printer, may not now be found among Barton's papers.

We include a genealogical listing, since first names reappear in sometimes confusing context, and we numbered the main characters. Family activity recorded in the surviving correspondence of Benjamin Smith Barton centers about Philadelphia and Lancaster, Pennsylvania; the farm in Frederick County, Virginia; and Woodbury and Bridgeton, New Jersey.

Throughout the text and appendices, unknown dates have a question mark as a place holder.

Acknowledgements

We are indebted to a host of associates far and near in searching, assembling, and documenting Barton history. Foremost we thank Whitfield J. Bell, Jr., then Librarian of the American Philosophical Society, historian of the beginnings of the Republic, skilled for his incisive commentary. In the early years of the project Murphy D. Smith, expediter, then Archivist of the Society, aided by William Spawn, panoply-antiquarian, ably assisted by Hildegard Stephens and Roy Goodman; then more recently Edward C. Carter, II, Librarian; and Beth Carroll-Horrocks; and for a time Stephen Catlett in the Archives. Valued, too, were William B. Forbush, III, and John C. Van Horne. In editorial ways Randolph S. Klein contributed. From the beginning we have been assisted and admonished by the Associate Editor of the Society's publications, Carole N. LeFaivre.

The Philadelphia circle also included Alan Amstrong, banker, who disclosed the portrait of the youthful Benjamin Smith Barton. The cooperation of the Historical Society of Pennsylvania was fostered by Nicholas B. Wainwright and Sarah A. Smith; of the Library Company by Edwin Wolf, II, and James Greene; of the University of Pennsylvania, by Francis

3 Figures from APS Yearbook for 1970: 227–230; Report of the Committee on Library on the Library for 1973 (1974): 569–571.

J. Dallet, Archivist, succeeded by Karen D. Stevens and Maryellen C. Kaminsky; of Pennsylvania Hospital by Caroline Morris. Critical was the role of the Academy of Natural Sciences: over the years librarians Ruth Brown, Carol Spawn, and Janet Evans; botanist Alfred E. Schuyler and generalist Robert McCracken Peck. In various ways Dorothy I. Lansing, M.D., Christine I. Ruggere, and James Mears assisted us. Thanks, too, to Margaret Evans of the Bartram Garden, and to those who cannot know our appreciation: John M. Fogg, Robert Benson Gordon, and Charles Coleman Sellers.

Appreciation is due to the late Charles van Ravensway and Marjorie McNinch of Wilmington; Professor Daryl Domning, Howard University; Ellen G. Miles, National Portrait Gallery; Georgia R. Beale of Washington, D.C.; Robert Fisher and Alfred L. Gardner, wildlife biologists; and William C. Sturtevant, anthropologist, all associated with Smithsonian Institution; and George Stewart, National Geographic Society. At the Hunt Institute for Botanical Documentation, Pittsburgh, Robert W. Kiger, Director, and archivists Abby Levine and Gavin D. Bridson contributed.

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In so many ways the late Emanuel Rudolph, Ronald Stuckey, and Jane Fullmer, professors, Ohio State University, Columbus, provided information, as did C. Barr Dawes of the Dawes Arboretum, Newark, Ohio; and Charles Boewe of Louisville, Kentucky. We thank Ian MacPhail of the Morton Arboretum, Lisle, Illinois; Caroline A. Sheehy, Special Collections, Newberry Library, Chicago; and the historian of Geology, the late Professor George White of the University of Illinois. Alexandra Mason, Rare Books, University of Kansas; and John A. Neu, Memorial Library, University of Wisconsin, shared their knowledge. At Tulane University Professors Harold Dundee, zoologist; Joe Poe, classicist; Austin Scully, historian; Jessie Poesch, art historian; Sylvia Metzinger, rare book librarian; Wilbur E. Manery and the late Martha Robertson, Latin American librarians; Lee Woodward, Latin Americanist; Milton C. Scheuermann of Architecture; Edward McC. Peebles of the Department of Anatomy, Medical School; and Cindy Goldstein of its library repeatedly obliged.

Thanks, too, to Alan D. Aberbach, Simon Fraser University, Barnaby, British Columbia; and James S. Pringle, Royal Botanic Gardens, Hamilton, Ontario. We are grateful to overseas friends, librarians and colleagues: to Ray Desmond, for many years librarian at Kew and at India House; Victor T. H. Perry of Kew; Leslie Thomas of the British Library; David

Mabberley of Oxford; David E. Allen of Winchester; T. Tudor-Williams, Registrar, Medical Society, London; Robin Price of Wellcome Institute; Barbara Greenwood of Merseyside County Museum, Liverpool; Monica Ory of Warwickshire County Record Office; Charles F. Finlayson, Keeper of Manuscripts, and Gordon T. Craig at the Institute of Geology, University of Edinburgh; at the University of Glasgow, Helen Brock and W. D. Ian Rolfe, Hunterian Museum; Frank Cusick and Colin A. McLaren at the University of Aberdeen; and R. B. McDowell and Gordon Davies at Trinity College, Dublin.

We are grateful in various ways to Librarian Wilhelm Odelberg, Royal Swedish Academy of Sciences; to Carl-Otto von Sydow, Library, University at Uppsala, and to the late Professor Sten Lindroth, biohistorian; also to Timothy Lenoir of Berlin; to L. Stange, of Kassel; to Rudiger Joppien, Museum der Stadt Köln, Germany; to Boris Komissarov, Leningrad State University; to H. Amorin Ferreira of Academia Ciencias de Lisboa; and Paul E. Vanzolini, Museu de Zoologia da Universidade de São Paulo. The assistance of a number of persons who supplied information on particular topics has been acknowledged in relevant notes.

Dolores Gunning of Tulane University, Brenda Mitchell of St. Louis, and Marjorie Ewan typed parts of the manuscript with devotion.

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We are grateful to Peter H. Raven and Marshall R. Crosby of the inimitable Missouri Botanical Garden for their essential support. Thanks, too, to Barbara Mack for her meticulous conversion of our old-fashioned typescript into modern electronic format.

Introduction

"Aided by genius, a Titian or an Angelo, can at one flight reach the summit of his art: but whatever capacity you allow to a naturalist, still, in the wastes of science, he can only advance step by step. In this way he has absurdities to engage, and prejudices to conquer, which require faculties not always at command, and at a time perhaps otherwise to be employed."
—Thomas Ashe in 1806[4]

Although Barton was a naturalist by inclination, medicine was his livelihood. The many pupils he helped prepare for the expanding young nation sometimes attained greater recognition than he. Yet he began his career at the University of Pennsylvania with enthusiasm and promise:

> *Such is the happy beginning; such is the natural presage of our future literary greatness!! A morning like this can hardly fail to be followed by a splendid and an happy noon. But although the cultivation of general science ought not to be neglected in America; and although much is naturally expected from the genius of our country in the several Sciences of Astronomy, Mathematics, Physicks, Chemistry, Medicine, Politicks, and many others; yet there are some Sciences which seem to spring, as it were, necessarily from the very nature of our situation:—Sciences these, for the improvement, and for the extention of which the literary world turn their attention to America.—If we reflect, but for a moment, on the recent discovery of the New-World;—on its prodigious extent; and on the little progress which has, hitherto, been made in the investigation of its native productions, it will be obvious, that I here revert to the Sciences of Natural History and Botany.*
>
> *Only three & 4 hundred years have now elapsed since Columbus first landed on the islands of our Hemisphere: Since that great discovery, the progress of civilized population, as well as the extention of Science, in different parts of the Northern Continent of America have been so rapid and so immense, as to form a singular, perhaps an unparalleled, circumstance in the annals of mankind. But the period of three hundred years is too short to unfold the works and misteries of Nature in a great continent. The progress of men in discovering, and investigating, truth is extremely slow:—Ages and generations must, sometimes, pass away before a Science can rear its head into system:—even the life of a man is, not unfrequently, too limited for the discovery of one solitary, important fact. So immense;—so infinite, is Nature, so little is man.*

So wrote, as a lecture, undated, the enthusiastic young professor, Benjamin Smith Barton.

Excited by his 1785 trip into western Pennsylvania, Barton took with him to Edinburgh his "Prodromus of the Flora of Pennsylvania," which he hoped to publish in London. His premature efforts failed, since he lacked finances, and he realized how much more information he needed. In London he was awed and stimulated by the richness of the libraries

---

4 Thomas Ashe, *Memoirs of a Mammoth* (Liverpool, 1806), 32. Copy in Liverpool City Museum.

of Sir Joseph Banks and John Coakley Lettsom, and the men themselves. He had learned of Thomas Pennant's *Arctic Zoology* (London, 1784–85, 2 vols.) and was confident he could enrich this account of North American mammals. Homeward bound from European studies, this youth of so much promise stepped ashore in September of 1789, his confidence in own abilities and future restored by the trust of his family, and the fascination of the sea-voyage with friendly and knowledgeable companions. Benjamin Smith Barton was a keen scholar, whose embrace encircled the natural history of the New World. With the enthusiasm born of a fresh spring morning he gazed over the country of which he was a proud American, orphan of a Loyalist, schooled particularly for patriotism and an appreciation of the opportunities presented by a government that called itself free. His heritage demanded that he carry on this pride of family. Had his father not been a particular friend of John Penn, son of the founder of Philadelphia; his uncle the much revered astronomer David Rittenhouse, a leading astronomer-inventor? Had he not a friend of kindred interest in the acknowledged naturalist, William Bartram?

The great handicaps he must surmount were his precarious health, his taking (borrowing?) funds entrusted to him by the Royal Edinburgh Medical Society, and his arriving home without a genuine diploma to show the University professors who had helped finance his trip. Picture his embarrassment and distress when he returned to Philadelphia without his medical degree, his trying to hide his disgrace with a "diploma" from an institution that had no medical standing.

Imagine his evasiveness when queried by Drs. Shippen and Rush, and his guilt over the years. How much did this shame contribute to his suffering from chronic gout and other ills? How much was his republication of European biology and medical titles, with minor additions of his own, due to his effort to repay his early professors, the Royal Edinburgh Medical Society, and other debts? His pride, his need for social standing in his community, the needs of family and relatives; his greenhouse, herbarium, and library (all necessary tools); and his attempts to patronize Pursh and Nuttall in the manner of British patrons such as Lambert and Banks: all these made for heavy financial obligations all his life. His great love for natural history inspired him to describe it for the world. How much did his accepting tasks from Jefferson (for the American Philosophical Society) impede his own accomplishments? How much was his failure to complete his major works due to the lack of support from the reading public of his day? Even his *Philadelphia Medical and Physical Journal* could not inspire enough subscribers. When paper shortages caused delays in the appearance of volumes of the *Transactions of the American Philosophical Society*, he turned to media outside his country.

Was not his lack of hospitality for some visitors due to his concentration on his medical pupils? In the end, has it not been his devotion to his teaching of future physicians in the lore of his day that has brought him lasting honor? As John Banister before him, Barton found an accepted profession essential for his economic survival. Banister, although he had long loved botany and had acquired a reputation at Oxford University for his knowledge of plants, especially American, was sent to Virginia in 1678 as a minister in the Anglican church with the understanding that he would send home plant specimens, and give an account of the natural history of his area. When Virginia planters were loath to adequately recompense Anglican clergy, Banister was eventually able to gain support, even though meager, from patrons in England.

Barton chose medicine as closest to his interests. Impressed with foreign government support of such naturalists as John and William Bartram, William Young, Schoepf, the Michauxs, and Enslen, Barton unsuccessfully sought aid from the United States government through Washington and Jefferson. When Charles Willson Peale learned that government support was essential to maintain a successful museum, he attempted persuasion for funds. The new nation, however, with war debts and the cost of establishing a capital, besides a general lack of appreciation, only with reluctance contributed to the Lewis and Clark expedition. "The principal cultivators of natural science in the United States," wrote Barton in 1805, "are professional characters, who cannot, without essentially injuring their interests, devote to these subjects that sedulous attention they demand." For those to whom he

begrudged attention, sometimes from lack of physical strength and not wishing to steal from the little time he was spared for research, he acquired the reputation of being stingy—he had little time for those whom he considered dilettantes, unqualified competitors, or leisurely conversationalists. Natural history was his prime love; association with the Medical School and his editorship of a journal were his pride; medicine his means of subsistence, with republishing European classics a hoped-for aid to financial solvency, status in the international scientific community, and enhancement of his reputation. His attempt to establish an American counterpart of the London Linnean Society, unsuccessful as such, gave impetus to others to found the Academy of Natural Sciences in 1812.

Barton contributed to Duponceau's acknowledged study of the American Indian, published a number of journal articles, and for his time left seminal manuscripts.

Barton's surviving correspondence, quoted in this biography, demonstrates the active interest and pleasure he took in the works of others. A dominant theme was his request for more information, whether on American Indian culture or language, on minerals for his cabinet, new natural history facts for revisions and additions to his many ongoing *opuscula*, or for acquiring books for what became an exceptional library.

Many of his correspondents were not given to publishing, but were active in other fields—medicine, farming, business. William Bartram of necessity farmed and in his spare time preferred drawing for Barton. There were correspondents who concluded that they had contributed to no end, since Barton, before his early death, did not complete works for which they had contributed notes. Heckewelder insisted that had he known his information would not appear in print by Barton, he would have published it sooner himself. Peck's notes on *Dipus* [5] were not added to Barton's article during delay in the publication of Volume 4 of the *Transactions of the American Philosophical Society*. Rafinesque held the most serious grievance when he unsuccessfully submitted a florula for publication in Barton's *Journal*, a flora that covered an area on which Barton himself had been concentrating for years.

On the other hand, many a foreign correspondent owed his election to the American Philosophical Society to Barton's intercession. He made requests and sometimes offered more than he could deliver. He kept up a steady pace of publication even though his health declined, and his ill-temper and impatience increased. In 1814 Jefferson resigned his presidency of the American Philosophical Society so that, with Barton out of the country for the following year, there would be no question of the succession of the calmer, more agreeable, and equally deserving Caspar Wistar.

Let it also be remembered that Barton preserved for posterity many of the observations of William Bartram, prodding for publication of the *Travels*, and recording what Bartram would never have put into print himself. "What you do not mean to publish yourself I shall be happy to receive, &, I trust, you will ever find me grateful in acknowledging the sources of my information," wrote Barton 30 December 1792. Bartram is frequently acknowledged in Barton's works, particularly in the *Fragments of Natural History*, William Bartram's drawings were used in Barton's *Elements* and other publications.

Perhaps the greatest tragedy for Barton was that he did not complete his Flora of North America, initiated after his western trip in 1785, with a small part printed in London while he was ostensibly a medical student at the University of Edinburgh. To forward its completion, from his own pocket he supported the assistance of the two botanists who attained greater fame in that field than he: Frederick Pursh and Thomas Nuttall.

Of Pursh, Benjamin Silliman, who met him in Canada in 1819, found his conversation "full of fire, point, and energy," his manner "although not polished...good humoured, frank and generous." So Barton may have found him when he met him at Hamilton's "Woodlands," and hired him to further his Flora of North America. Pursh, however, was an alcoholic, and after several years of working in Barton's herbarium and of collecting journeys

5 [Meadow Jumping Mouse, now *Zapus hudsonius* Zimmerman. MSW.]

frugally financed, he departed unhappily from Barton, and joined David Hosack in New York, taking with him snippets from the Lewis and Clark plant specimens, and duplicates of those he had collected for Barton. With Lambert restraining his drinking, he produced his *Flora* in 1814, barely mentioning Barton's part.

Thomas Nuttall, amateur botanist and journeyman printer, in April of 1808 sought out Barton to identify a plant specimen. After attending a few lectures in Barton's class, he replaced Pursh in forwarding Barton's ambitions toward his Flora of North America. He made a number of short collecting trips for Barton, and during the winter months worked in Barton's herbarium. Early in 1810 he began his journey to the West. On changing the route Barton had outlined for him, he missed a letter and probably expense money sent to him in care of Governor Hamilton in Vincennes, Indiana—instead, he joined a party to ascend the Missouri River. Missing the funds may have initiated his alienation from his mentor. After returning to St. Louis, he descended the Mississippi River to New Orleans, shipped specimens to Barton, but returned to England fearful that as a British citizen he might be caught up in the War of 1812, thus terminating his association with Barton. In time he returned periodically to the United States to continue his plant explorations. Nuttall's *Genera* was dedicated to Corrêa da Serra, who helped finance later trips.

There can be no doubt of Barton's devotion to natural history and his desire to see the accumulating records of discoveries in the young Republic in print. He was a veritable squirrel in the woods of natural history, collecting, planting, leaving nuts for others to carry off. Baldwin, Darlington, Ives, Horsfield, John Richardson Young, for examples, attest to his inspiration. Young dedicated his thesis for his M.D. degree, *An Experimental Inquiry into the Principles of Nutrition, and the Digestive Process* (Philadelphia, 1803), to his father, Dr. Samuel Young, and to Barton, "a gentleman not less distinguished by eminent skill in his profession than by his zeal to promote every branch of useful knowledge; this essay is also inscribed, as a small tribute in respect for his talents, and gratitude for the many favours received."

Barton had noticed the complementary distribution of like genera in eastern Asia and in eastern North America, and he read a paper on the topic before the American Philosophical Society in 1800. This was to interest Alexander von Humboldt when he visited Philadelphia in 1804 on his return from his travels in Mexico and northern South America. Humboldt was to mention Barton's views on the distribution of plant genera in his classic *Essai sur la Géographie des Plantes* (Paris, 1807), often considered the beginnings of plant geography. Jefferson and William Clark were most anxious that Lewis should complete the natural history account of their expedition, and so Barton received the journals and notes in 1811, when he was now in ill health and pushing to get his own material into print. Pursh published 124 plant species with plates of thirteen Lewis and Clark novelties; George Ord published descriptions of some of the mammals, and Alexander Wilson some of the birds of the Expedition.

With his publishing, Barton was all the while visiting patients, writing and receiving letters from correspondents here and abroad, and from former pupils and doctors who were recommending their apprentices to Barton for admission to the Medical School. A complex, many-faceted person, professor in the University of Pennsylvania Medical School, founder and editor of *Philadelphia Medical and Physical Journal*, a Vice President for years of the American Philosophical Society, Barton was revered by some, disliked and disdained by others who accused him of receiving more than he gave. Jealous of his time, Barton was often too busy to display the books he owned, though he loaned on occasion to special friends. He usually declined to exhibit his herbarium to visitors. Yet Barton inoculated students with his enthusiasm, and he played a decisive role in the lives of key figures in American natural history and medical practice of his time.

Before his own death, Jefferson decided that "history, long after the passions and polemics of the time have been quitted, requires any barrier be probed, what ever the cost, when persons have been defamed or the truth injured or questions not asked." Reader beware, not only of the printed word of earlier biographers, but of opinions expressed in letters. They may be couched in terms too glowing if the writer hopes thereby to gain; or in

venomous tongue if prompted by jealousy, hearsay, or misunderstanding. Considering available sources we have attempted to correct some printed impressions, and to give an appropriate appreciation of our subject, a handicapped, but exceptional human.

We have purposely not edited letters to Barton. They demonstrate the difficulties posed by those attempting to write in a language with which they were not familiar, or by those of limited education in a new nation.

Barton's Biographers

The two persons who knew Barton well, his nephew W. P. C. Barton, who accompanied him into the field and sketched for him, and Charles Caldwell, a pupil and competitor, have left their different estimates of the professor so influential in their early lives. W. P. C. Barton's obituary was read before the Philadelphia Medical Society on 16 February 1816, and soon thereafter passed to Caldwell, editor that year of *Port Folio*.[6] Caldwell provided a preface signed only "C." to the sketch, which appeared in April that year, but he deleted the account of Barton's early life and the bibliography of his writings, considering that they "would scarcely be interesting to the majority of our readers."

In balance, however, Caldwell did append an appreciation of Barton's industry, diligence, and perseverance. The nephew's memorial carries a perceptible, hesitant tone suggesting a withholding of some of what could have been told. At that time Barton's widow, Mary, and her brother Edward Penington were still sorting papers, and the nephew was kept away. Also he was speaking before an audience that contained hostile as well as loyal physicians. Later, when he reissued Barton's *Elements* in a revised edition (1836), he reinstated whole paragraphs of the obituary, and the list of Barton's writings.[7] It is this version that has been widely used by later biographers and encyclopedists in their accounts of Benjamin Smith Barton.[8] Still found in the nephew's sketch, and repeated by others, is the erroneous statement that Barton received a medical degree from Göttingen (Barton had written his brother William in 1787 that he planned to go to Göttingen). In 1971 Whitfield Bell confirmed Barton's honorary M.D. degree from Kiel, the diploma dated 31 August 1796.[9]

Caldwell's reminiscences dating from his student days at the University, but written during the last seven or eight years of his life, were published in 1855 by his sister-in-law, Miss Harriet Warner.[10] Samuel Gross, who met Caldwell before his death in 1853, characterized his recollections as often "quite dramatic," adding, "for assurance and insolence, I do not think its equal can be found."[11] Caldwell's memories of Barton, although biased, are perceptive, and some episodes have been quoted elsewhere in this book. Caldwell has fleshed out a portrait of a professor whom he both hated and admired.

No fresh detail came to light in the later decades of the nineteenth century on Barton's life or backgrounds of his works, since Barton's papers were sequestered in Thomas Pennant Barton's home with the Livingstons and then the Delafields. John Harshberger and Thomas Meehan, with more than usual interests in history, could add only footnotes to W. P. C. Barton's essay.

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6 *Port Folio* ser. 5. 1 (1816): 273–287, portr.

7 W. P. C. Barton, *Barton*. The 50 titles he listed represent only the major publications of B. S. Barton. See our Appendix I.

8 *ACAB*; *Biogr. Univ.*; *DAB*; Drake, *Dictionary*; *DSB*; Goode, *Memorial*; Gross, *Lives*; Harshberger, *Botanists*; Kelly, *Cyclopedia*; Kelly & Burrage, *Biography*; Lloyd, "Barton"; Middleton, "Barton"; Thacher, *Biography*; Younans, "Barton."

9 Bell, "Barton," and see our "Index."

10 Caldwell, *Autobiography*.

11 Gross, *Autobiography* 1: 164, 2: 282–287.

The discovery of the overlooked plant specimens at the turn of the century,[12] with their important bearing on North American floras as related to Pursh and Nuttall, opened an inquiry into Barton's role. In 1926, Pennell called attention to the "mystery" of Barton's unfinished floras,[13] but in 1942 his first examination of Barton's records at the Delafield home initiated the present probe into the life and times of Barton.[14]

Jeanette Graustein published, as an aid to her important biography of Thomas Nuttall, a documented critique of Barton.[15] She came to support Asa Gray's opinion, "all through, the distinguished Benjamin Smith Barton does not appear well." While elaborating on what she identifies as Barton's "foibles," his "aspirations bred self-delusion," and his "lack of scientific generosity and probity," Miss Graustein, with allegiance to her own subject, concludes that "Barton's greatest contribution to science was his sponsorship and encouragement of young Thomas Nuttall." Surely when she concludes that "Barton obviously considered [Nuttall] expendable," she displays a failure to appreciate the scope, grand plan, and limits of Barton's energies and resources. Here was a professor meeting classes in America's leading medical school, dispatching queries and answers to an international address-book, noting the flowering of natives and exotics in local gardens, directing artists in recording details of plants and animals, coping with long-standing debts and persistent ill-health. Yet we find him generous to needy students and family members, and only occasional instances of his "irritable and even cholerick nature."

Barton Portraits

Four artists, between 1789, when he was twenty-three, and 1813, at the age of forty-seven, three Americans and a native of Dijon, sketched Barton. The earliest portrait, which only recently has come to light, was painted by Samuel Jennings[16] in 1789 on Barton's return from study in Europe. In his biographical essay on his uncle, William P. C. Barton says "his portrait of kit-kat-size, was painted in England, by his ingenious friend and early protégé, Mr. Jennings: this was, at the time it was taken, a good likeness."[17] But Jennings made portraits and miniatures in Philadelphia from 1787 to 1792, the year he produced for the Library Company of Philadelphia the allegorical *Liberty displaying the Arts and Sciences.* He then moved to London, where he painted copies of Old Masters. Jennings (the painting reproduced as our Figure 1) featured young Barton holding a sketch of Indian mounds of the Ohio country. These mounds had been the subject of his *Observations.* Barton's son, Thomas Pennant Barton, inherited the painting, which on his death in 1869, according to the inscription on the verso of the canvas, was given that November to "J. R. B." by Mrs. Cora Livingston Barton, the widow. The history of the battered and darkened portrait is undocumented from 1869, when it was presented to Dr. John Rhea Barton, nephew of Benjamin Smith Barton, until its discovery in 1984 in a vault of the First Pennsylvania Bank NA. Barton left no record of the portrait. It is now in the keeping of the American Philosophical Society.[18] Could it have been commissioned by his step-mother, Mrs. Sarah De Normandie Barton, through his brother William on his return from the University of Edinburgh?

Of the four portraits of Barton, the best known, from its frequent reproduction, and most often referred to is the profile by Saint-Memin (Figure 2), engraved by Christopher Gobrecht (1785–1844). This is often the only Barton portrait represented in collections, as in the Jane Loring Gray album at Harvard, assembled from that made by the wife of Thomas Potts James

12 Cutright, *Lewis and Clark*, 365, the specimens at the ANSP.
13 Pennell, "Elder Barton," 17–34.
14 Pennell, "Barton," 108–122.
15 Graustein, "Barton," 423–438.
16 Groce and Wallace, *Artists*, 348.
17 W. P. C. Barton, *Barton*, 34.
18 Whitfield J. Bell, Jr. *APS Yearbooks* (1984), 87.

of Philadelphia. Saint-Memin was in Burlington, New Jersey, and Philadelphia after 1788, having arrived with his family from Switzerland as a refugee from the French Revolution.[19] With great success he made use of the physiognotrace invented in 1786 by Giles-Louis Chretien. From an exact profile of the sitter he reduced the original by a pantograph to the size of a miniature about two inches in diameter, and recorded it directly on a copper plate with graver and roulette. Saint-Memin produced over eight hundred profiles, a virtual gallery of prominent, and not so prominent, Americans. The Barton profile made in 1802, engraved by Gobrecht for *Port Folio,* was published by Harrison Hall at 133 Chestnut Street. Had Palisot de Beauvois encouraged the sitting for his countryman? In R. M. Patterson's letter from Paris to Barton 18 December 1809, reference is made to his having F. A. Michaux's printer strike off one hundred copies of "your portrait."[20]

William Bartram evidently referred to this Saint-Memin portrait when he wrote Barton, "I received your inestimable present fr[om] James. The portrait is an elegant piece of painting, and a perfect & admirable likeness. I have now your Image always present, either before my Eyes, or engraven on my Heart or both at once."[21]

William P. C. Barton, surely well-qualified to know, wrote "The best likeness extant of Dr. Barton, is the fine profile, done in mezzotinto, by Saint-Memin (the engraving prefixed to this sketch [in *Port Folio*] is copied from it) when the doctor was about thirty-seven years of age." The original life size crayon portrait is at Pennsylvania Hospital.

Irony it is that the least known and rarely published portrait of Barton, done in 1807, has been attributed to the best known portraitist of the time, Charles Willson Peale.[22] However, in 1816, in a mistaken attribution(?), William P. C. Barton wrote that a portrait "in a more finished style of painting, though certainly not a happy resemblance, was painted by Mr. Rembrandt Peale, within the last two years of the doctor's life."[23] This portrait in oil measures 28 × 23 inches and belongs to the University of Pennsylvania (Figure 3). It was exhibited at the Philadelphia Museum of Art in 1965, and illustrated in the Museum's catalog, *The Art of Philadelphia Medicine* (Philadelphia, 1965); see Bell, *Art.*

There is reference, however, to C. W. Peale's having done a portrait of Barton in Peale's letter to John Hawkins, 5 May 1807, when he wrote "I mentioned in my last [letter] that I resumed my pencil and I have lately painted the Portraits of Mr. Barton, Mr. Fulton and lastly one of Govr. [Meriwether] Lewis."[24] The history of this Peale portrait is said to relate to Dr. Perry Pepper of the University of Pennsylvania Medical School, according to a 1937 letter of W. W. Herrick to General Delafield.

The last known portrait of Barton was made in 1813 by Bass Otis, a native of Bridgewater, Massachusetts.[25] After working as an apprentice scythe-maker and then as a coach painter, Otis was a portrait painter in New York City for four years. His first exhibition in Philadelphia was a group of eight portraits at the Columbian Society of Artists in May 1812. The Philadelphia publisher Joseph Delaplaine commissioned Otis to do portraits for his *Delaplaine's Repository of the Lives and Portraits of Distinguished American Characters* (Philadelphia, 1815–1816). Twenty-four were planned, but only eighteen issued. Whether this portrait of Barton (Figure 4) was intended for *Repository* is unknown, but it was not included. The engraving at the American Antiquarian Society has, lower right: "B. Otis Del. Sc. circa 1816." Otis made copies of his own work and popular paintings. This portrait of Barton was published evidently for the first time in *Chronica Botanica* 14 no. 1 (1950/51), pl. 72, from the mezzotint in Frans Verdoorn's collections. The Stauffer collection at the Historical Society of

19 Groce and Wallace, *Artists,* 555.

20 Barton papers, APS.

21 William Bartram, Kingsessing, 13 Dec. 1802. Barton papers, HSP.

22 Bell, "Art," 46; Agnes Addison, *Portraits in the University of Pennsylvania* (Philadelphia, 1940), no. 16.

23 Rembrandt Peale also painted Mary Barton's portrait, a more mature work.

24 Jackson, *Lewis and Clark,* 410.

25 Gainer B. Davis and Wayne Craven, *Bass Otis, Painter, Portraitist, and Engraver* (Wilmington, Del., 1976).

Pennsylvania includes a redrawn, undated, copy (vol. 28, p. 2209). The "fine miniature" by Benjamin Trott (ca. 1770–1843), who lived in Philadelphia from 1806–1819, has not been discovered. The nephew's approval: "in all respects, except the expression of the mouth, a most excellent likeness," excites our interest.[26]

Does William P. C. Barton's opinion that "the execrable caricatures now [1816] exposed for sale in the print-shops and bookstores, have only the most distant traces of resemblance" concern any of these?

Barton left us no opinion of his several portraits, or of the artists who gave us these visual records of the man. In a note on Alexander Hamilton's portrait by John Trumbull he wrote "the painting does no credit to the character of the painter."[27] He proceeds to enumerate the inaccuracies in the painting and added, "Trumbull, who is one of the first artists of our times, and who in fertility of genius, takes the laurel from his countrymen, has discovered neither taste nor judgment in this painting." Barton concluded "painters paint from two motives, from the impulse of gain, and from the love of reputation." In the light of his remarks, we wish he had assessed the four artists who memorialized him. We recall Joshua Reynolds, who gave his formula: "I mixed brains with my paints."

Notes

We have attempted a documentary biography of a complex man, "a man of no ordinary observation and intelligence," in the estimate of the British naturalist Osbert Salvin. Considering the far-reaching interests of Barton, this book is a seed-bed—planting about a dozen seed-subjects, which he initiated between 1787 and 1815. It is an infectious biography that poses far more questions than it settles. As with such contemporaries as Jefferson, John Vaughan, and Samuel Latham Mitchill, Barton was reaching out to readers, writers, and collectors, not only in the nation but in kindred minds in Europe and around the world.

It is beyond us to think we have more than introduced John Heckewelder, for example. There are twenty-two letters written by him in the College of Physicians alone, and fourteen in the Barton papers. For prolific letter writers these samples will whet the curiosity for others. Many of Barton's would-be rewarding letters were left with printers or passed to autograph collectors. The Dreer collection of autographs at the Historical Society of Pennsylvania, for example, represents a popular avocation of the late decades. As Plato said, it is no imputation if the huntsman has not caught all the game in the wide wood.

"As to my speculations," wrote Barton in the preface to his *Archaeologiae Americanae*, "they cannot do much injury to science; and I even venture to hope, that they will not be more extravagant than the speculations and conjectures of some of the greatest names in geological and archaeological pursuits." We have attempted to correct some published impressions of the man and to set the response in its historic arena. Reader beware. "Credulity is the most injurious feature in the character of the naturalist, as well as of the historian," wrote Barton. "Its influence in one individual, is often felt and propogated through many ages. Unfortunately too, it has been the vice of naturalists, or those who have touched on questions relative to natural history." Barton remarked to his class on one occasion: "Neither the hand nor the tongue of the historian should be palsied by the fear of censure, or the thunder of abuse." As Will Durant wrote, "For the probability of error increases with the scope of the undertaking,

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26 Theodore Bolton and R. P. Tolman do not mention Barton in their "Catalogue of miniatures by or attributed to Benjamin Trott," *Art Quart.* 7 (1944): 278–290.

27 Barton papers, APS.

and any man who sells his soul to synthesis will be a tragic target for a myriad merry darts of specialist critique."

"The poetry of history does not consist of imagination roaming at large, but of imagination pursuing the fact and fastening upon it. ...The dead were and are not. Their place knows them no more and is ours today. Yet they were once as real as we, and we shall tomorrow be shadows like them."[28]

G. M. Trevelyan

28 G. M. Trevelyan, in his inaugural lecture as Regius Professor of Modern History at the University of Cambridge in 1927.

A Barton Chronology

"A Chronology presents a happy combination of sparse and unconnected facts, which, brought together and fitted to each other, form a whole of symmetry as well as of system."
—Thomas Jefferson, 12 May 1811

1756 •Rev. Thomas Barton married David Rittenhouse's sister, Esther.

1765 •Drs. John Morgan and William Shippen establish medical department at the College of Philadelphia.

1766 •Feb. 10. Benjamin Smith Barton [BSB], seventh child, born in Lancaster, Pennsylvania.

1774 •BSB's mother, Esther, died.

1776–1777. BSB, Robert Fulton, and Caleb Cope's son John studied drawing under prisoner of war Major André in Lancaster.

1776 •Rev. Thomas Barton married Sarah (Bard) De Normandie. Rev. Barton, Tory sympathizer, condemned by "Patriots," and ordered to British-held New York City.

1780 •May 25. Rev. Thomas Barton died in New York City.

1780–1781
•BSB attended York Academy.

1783 •About this time BSB entered College of Philadelphia for general studies and apprenticed to Dr. Shippen in Philadelphia.

1784 •Made anatomical drawings.

1785 •May 22–Oct. Spent summer in frontier Pennsylvania and Ohio wilderness on border survey with David Rittenhouse.

1786 •June 16. BSB drew a tooth, longitudinal section showing internal structure, labeled "Fig ii."

1786 •June 23. Sailed for England to enroll at University of Edinburgh.
•Aug. Had tea with Cullen.
•Fall. Elected to the Royal Medical Society of Edinburgh. "Ill" makes trip to London.
•Dec. 14. Elected to Natural History Society of Edinburgh.

1787 •April. Awarded Harveian Prize for his essay on Henbane.
•Aug. 26. Proposed to Bartram that they join in publication of *Travels.*
•After Aug. *Observations on some Parts of Natural History, to which is Prefixed an account of several remarkable vestiges of an ancient date, which have been discovered in different parts of North America* published in London. Began publication of *Prodromus Florae Pennsylvanicae.*

1788 •Jan. 15. Elected to Speculative Society of Edinburgh.
•Before Feb. 28. Resigned (or dismissed from) Edinburgh Natural History Society.
•April 15. Dropped from roll of Speculative Society.
•July 8. In Paris but missed seeing Jefferson.
•Sept. 29. In Edinburgh.
•Dec. 11. In Amsterdam. Bartram's letter declines joint publishing scheme for *Travels.*

1789 •Jan. 6. Elected *in absentia* member of American Philosophical Society.
•Feb. 2. Wrote Bartram of intention to take M.D. at Göttingen.
•Feb. 10–14. In London. Visited Dr. John Hunter and others.
•Feb. 13. Wrote brother William of lack of funds.
•April 24. William Barton wrote that their stepmother will provide funds for return passage.
•July 22. Sailed from Gravesend on the *Apollo.*

•Visited and received "diploma" from Lisbon Academy of Sciences.
•Sept. 23. Arrived at Wilmington, Delaware.
•Fall. Samuel Jennings painted BSB's portrait.
•Oct. Opened medical practice and unsuccessfully sought position of "attending physician" at the City Jail.
•Dec. 22. Issued *Proposals* for "Remains of Antiquity."

1790 •Succeeded Adam Kuhn as Professor of Natural History and Botany.
•Elected a curator at American Philosophical Society.
•Elected a Fellow of the College of Physicians.
•April 21. With Fellows attended funeral of Benjamin Franklin. Began correspondence with Pennant on zoology.

1791 •College of Philadelphia united with University of Pennsylvania.
•Barton visited Falls of Passaic, New Jersey.
•Oct. Bartram's *Travels* published.

1792 •Feb. 3. Palisot de Beauvois attended APS meeting.
•April 25. André Michaux arrived in Philadelphia.
•May 27. APS appointed a committee to study Hessian Fly.

1793 •July 14. Alexander Wilson arrived at New Castle, Delaware, on *Swift*, out of Belfast.
•July–Aug. Refugees and 1000 revolting slaves arrived from Santo Domingo, bringing yellow fever.
•Aug. 1–Nov. 9. Yellow fever destroyed one-tenth of Philadelphia residents. Barton established a reputation for treatment.
•Aug. 30. Jefferson invited BSB to dinner at his Gray's Ferry abode.

1794 •C. W. Peale leased Philosophical Hall for his museum.
•Jan. 4 André Michaux visited BSB and borrowed Linnaeus, *Systema Naturae,* ed. (Leiden, 1756).
•June 4. Priestley and family arrived in New York.

1795 •July 18. BSB loses appointment as Professor of Chemistry to Woodhouse.
•Nov. 14. Judge John Davis of Boston visited, admired BSB's library and "Herbarium Americanum."

1796 •Jan. 23. BSB wrote to Joseph Banks.
•April 11. Inoculated a young Wyandot Indian for smallpox.
•May 11. Wrote Ebeling in Hamburg soliciting a medical degree.
•June 25. Witnessed David Rittenhouse signing his will.
•June 26. Rittenhouse died.
•*Memoir concerning the Rattle-snake.*
•Aug. 31. Awarded M.D. Degree by Christian Albrechts University at Kiel.
•Oct. 10. Lettsom acknowledged settlement of loan.

1797 •June 21. *New Views* dedicated to Jefferson.
•Aug. 8. At Oneida, New York, on tour to Niagara Falls.
•Elected Professor of the Materia Medica.
•Sept. (?). Married Mary Penington.

1798 •Now a (staff?) physician at Pennsylvania Hospital.
•Jan. 29. George Washington complained of loan of $60 that he had been unable to collect from Barton.
•Aug. 23. Wilson's antecedent, L. J. P. Vieillot, ornithologist, sailed from New Castle, Delaware, for France. Yellow fever on board took lives of his wife and three daughters.
•Oct. 2–13. With Maclure, Barton made a mineralogical foray.

1799 •*Fragments of the Natural History of Pennsylvania* published.
•Spring. Pursh arrived in Baltimore.
•Daughter Sarah Esther born.
•Nov. 17. BSB toured Germantown with Hipolito da Costa Pereira.

1800 •Jefferson elected third president of the United States.

•Feb. 7. BSB read "A Geographical View of the trees and shrubs of North America," before the APS.
•Aug. 30. Pursh presented a *Sagittaria acutifolia*[29] drawing.
•*Supplement to Memoir concerning the Rattle-snake* published.

1801 •Hosack established Elgin Botanical Garden in New York. BSB's paper on goiter translated into Portuguese by Pereira.
•*Collections for a Materia Medica*, ed. 2, Part First, published.

1802 •University of Pennsylvania Medical School moved from Fourth and Church to Ninth Street between Market and Chestnut.
•Peale's Museum moved to Independence Hall.
•French artist P. J. F. Turpin made botanical drawings in Philadelphia for BSB.
•Bernard M'Mahon issued a sales broadside of nursery stock and seeds.
•March 26. Secretary of War Henry Dearborn granted BSB permission to visit Cherokee country on unfulfilled three months' tour.
•Jan. 15. Jefferson elected president, BSB one of three vice-presidents, of APS.
•March 29. Jefferson invited BSB to visit Monticello.
•July 16–Oct. BSB toured Virginia. Guest of Madison and Jefferson.
•Late summer. Yellow fever epidemic in Philadelphia.
•Oct. 1–2. Visited in Lancaster.
•Oct. 20. Benjamin Silliman arrived in Philadelphia for 5-month stay.
•Nov.–Dec. Silliman attended BSB's lectures.
•Nov. 13. A. Michaux died in Madagascar, age 56.

1803 •Pursh may first have met BSB at Hamilton's "Woodlands," where he succeeded John Lyon.
•Feb. 14. BSB received a live "jumping mouse," *Dipus*, from Bartram.
•Feb. 23. Philadelphia Linnaean Soc. noticed in *U.S. Gazette*.
•Spring. Tutored Meriwether Lewis in natural history in preparation for Expedition.
•March 19. Michaux's *Flora* published in Paris; a fillip for BSB's planned "Flora Americanum."
•April 1. Presented copy of his *Elements* to APS.
•June 1. John Lyon collected last known wild *Franklinia*.
•Aug. 30. BSB visited Bartram and [both?] dined with Jefferson.
•Nov. 30. On Jefferson's suggestion, BSB invited Bartram to accompany Freeman's Red River Expedition, but Bartram declined. Peter Custis went.
•Thomas Pennant Barton born this year.

1804 •M'Mahon published a 30-page *Catalogue of American Seeds*.
•Feb. 6. Joseph Priestley died, age 71.
•Feb. 10. *Collections for a Materia Medica* Pt. 2, preface signed.
•March. Enslen departed from Philadelphia for Savannah where he met Brickell.
•May 12. Louisiana Purchase celebrated in Philadelphia with festival parade.
•May 15. BSB took class to Hamilton's "Woodlands."
•May 20. Humboldt, Bonpland, and Carlos Montufar arrived from Havana on the frigate *La Concepción*.
•May 21. Lewis and Clark set out from St. Charles, Missouri.
•May 28. BSB met Humboldt and provided letter of introduction to Jefferson for visit in Washington.
•May 29. Humboldt and party travelled to Washington.
•June 18. Humboldt and party visited Muhlenberg and Bartons in Lancaster enroute from Washington to Philadelphia.

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29 [Pursh's *Sagittaria acutifolia* was later encompassed within *Sagittaria graminea* Michx., the Grassleaf Arrowhead. ITIS. IPNI.]

•June 21–18. Humboldt and BSB discussed distribution of plants.
•June 21. Humboldt and associates were guests at Wistar's party.
•June (between 21–28). Humboldt and party dined at Peale's museum. Present were Wilson, Ord, "two Bartram's," one instead surely BSB, and John Bachman.
•June 29. Humboldt and party sailed on the *Favorite*, arriving at Bordeaux Aug. 3.
•Aug. 2. BSB visited Bartrams' garden.
•Fall. Launched *Philadelphia Medical and Physical Journal.*

1805 •Jefferson re-elected President of the United States.
•BSB met Delile, French vice-consul.
•Jan. 3. BSB employed Pursh to assist in projected flora of North America.
•Jan. 3. Read eulogy for Priestley before the APS.
•June 1. Visited Hamilton's "Woodlands."
•June 6. Visited Bartrams' garden.
•Mid-Aug. Muhlenberg visited BSB.
•Nov. 16. Lewis and Clark plant specimens delivered for "examination."
•Dec. 7–March 23, 1806. Lewis and Clark wintered at Fort Clatsop, Oregon.

1806 •BSB botanized about Passaic Falls and Perth Amboy, New Jersey.
•April–Nov. Pursh botanized for BSB in Virginia to North Carolina border.
•July 1. Lewis collected type of Bitterroot, *Lewisia rediviva* Pursh, at the mouth of Lolo Creek, Montana.
•July 17–28. Lewis, separated from Clark, reached northerly point of Expedition. Passenger pigeons "suddenly appeared on July 23rd." Party shot enough to ease hunger pains.
•Sept. 22. Fulton erroneously reported BSB as "philosophizing with the President" at Monticello. It was Pursh who visited.
•Fall. Wm. Baldwin returned from China on *Wampoa*, and enrolled as pupil of BSB.

1807 •Jan.–March. Humboldt published *Essai sur la Géographie des Plantes* (Paris) with table provided by BSB (pp. 154–155). Possibly issued in 1806; title page bears the date 1805.
•May 27–Sept. Pursh departed on second botanizing trip for BSB, this time to northern New York.
•June. John Lyon introduced to Dr. Felix Robertson of Nashville, once Barton's pupil.
•July. Leschenault de la Tour, who had accompanied Baudin to Australia, visited BSB, departed for France.
•Aug. 12. *Discourse* preface dated.
•Nov. 17. Through Leschenault BSB elected to Société d' Émulation (Mauritius).

1808 •Feb. 22. BSB invited 21 guests to a supper.
•April 25. Nuttall, who had arrived on 23rd, met BSB.
•April 26– . Nuttall attended botany lectures by BSB.
•May 26. Pursh completed drawings and descriptions of plants for BSB.
•Sept. A. Wilson published first part of *American Ornithology.*
•Dec. 13. BSB paid Pursh $25 on account, balance to follow next March.

1809 •June 6. Nuttall returned from first botanizing trip for BSB.
•July. BSB made a drawing in color of spleenwort, *Asplenium platyneuron*, collected near the Schuylkill.
•Aug. 10. Nuttall at Wilkes-Barre, Pennsylvania, on second collecting trip for BSB.
•Oct. 10. Nuttall at Canandaigua, New York, collecting for BSB. *Specimen of a Geographical View*, 26 pp. of planned 400, appeared.
•Oct. 11. Lewis (Meriwether) died, aged 35.

1810 •April 12. Nuttall departed on two-year collecting trip for BSB to Northwest." July 18. BSB botanized at Rockfish Gap, Blue Ridge.
•Late Sept. Nuttall arrived in St. Louis to spend the winter.
•Oct. Muhlenberg visited BSB.
•Fall. BSB erected a small greenhouse near his home on Chestnut St. near 8th.
•Third edition of *Collections for a Materia Medica.*

1811 •March. Nuttall and Bradbury set out on foot from St. Louis with first lap of Astor Expedition to Mandan Villages.
•Fall. Pursh visited Peck at Harvard, and Hosack at Elgin Botanical Garden in New York.
•Fall. Pursh embarked for England with specimens and descriptions made during Barton's employ.
•Dec. 16. Earthquake at New Madrid, on the Mississippi River.
•Mid-Dec. Nuttall shipped collections—since lost—to BSB and embarked for England on the *United States* from New Orleans.

1812 •Jan. 21. Pursh attended meeting of Linnean Society in London.
•Jan. 25. First meeting of founders of ANSP in John Speakman's apothecary shop.
•Feb. 21. Corrêa da Serra arrived at Norfolk, Virginia, on U.S.S. *Constitution.*
•March 17. ANSP formally founded at Mercer's Cake Shop on Market St.
•Spring. Nuttall in London visited Lambert, Fraser's Nursery, etc.
•June 18. U.S. Congress declared war with England.
•June 18. Hosack offered living plants to BSB for the "Pennsylvania Hospital Garden."
•July. BSB outbid ANSP for Godon's Mineral collection.
•Summer. Godon sentenced to prison for threatening BSB.
•Dec. 23. BSB's Preface to *Cullen's Treatise* signed.
•BSB's edition of Gronovius's *Flora Virginica.*
•*Elements of Botany,* ed. 3, appeared.

1813 •April 19. Benjamin Rush died, aged 68.
•William Hamilton of "Woodlands" died, aged 68.
•May 3. *Additional Facts relative to the Opossum,* preface dated.
•Summer. BSB appointed Professor of Theory and Practice of Medicine.
•Aug. 23. A. Wilson died, aged 47.
•Aug. BSB visited William Bartram at the Garden.
•Dec. 21. Pursh presented a copy of his *Flora* to the Linnean Society (London).

1814 •Revised edition of *Memoir concerning the Rattle-snake.*
•April 15. Corrêa da Serra lodged at same boarding house with Darlington.
•Jacob Bigelow, who had attended BSB's lectures, published *Florula Bostoniensis* in Boston.
•Sept. 13. Lyon died at Asheville, North Carolina, aged 49.
•Oct. 7. *Archaeologiae Americanae,* an "extended ed. of *New Views,*" preface dated.
•Nov. 23. Jefferson resigned presidency of APS.

1815 •March 17. BSB attended his last meeting of APS; "Committee of History" formed.
•April 9. BSB "sails in a few days for Europe" accompanied by his son Pennant.
•April. In France. Meets Cuvier and discusses "Siren."
•May 23. Muhlenberg dies, aged 62.
•June 6. At Linnean Society in London, Barton's paper on the Limpkin read.
•July 16. Still in Paris, lodged at Hotel de Wagram.
•Summer. Corrêa da Serra agreed to deliver books purchased by BSB to his home in Philadelphia.
•Oct. BSB and Pennant in New York; guest (?) of Hosack; ill.
•Nov. 1. Lettsom died, aged 71.
•Nov. 16. BSB prepared memoranda on reprinting certain publications.
•Nov. 28. BSB and Pennant, accompanied by Mary Barton, arrived in Princeton, and a day or more later in Philadelphia.
•Dec. 16. Dictated a memoir on genus *Bartonia* to W. P. C. Barton.
•Dec. 19. BSB died in sleep, aged 49.

1816 •Jan. 1. Jefferson inquired of Corrêa da Serra whether Lewis's journals had been located among Barton's *reliquiae.*
•Jan. 25. Rafinesque solicited Chair of Natural History or Botany at University of Pennsylvania.

·Feb. 16. W. P. C. Barton delivered the memorial for BSB before the Medical Society.
·April. First installment of purchase price, $2770, made on books from BSB library for Pennsylvania Hospital.
·April 4. Library Company through J. F. Norris purchased 23(?) books from BSB Library for $72.50.
·April 13. APS through John Vaughan purchased 134 of BSB's books valued at $151.60.
·April. W. P. C. Barton's memorial of BSB published in *Port Folio*, edited by Caldwell.
·June 16. Lewis's journals located among BSB papers.
·Sept. 18. M'Mahon died, aged 41.

1817 ·Humboldt published *De Distributione Geographica Plantarum* (Paris), wherein he cited (p. 76) BSB's conclusions on plant distribution.
·Sarah Esther Barton died, aged 17.

1820 ·June 19. Joseph Banks died, aged 77.
·Pursh died in Montreal, aged 46.

1822 ·DeWitt Clinton commemorated Barton, "that great naturalist," naming *Clupea bartonia*, a planktotrophic teleost fish, a herring

1823 ·William Bartram died, aged 85.

1824 ·Historical Society of Pennsylvania founded. Transfer of some BSB papers from the APS by Duponceau.

1869 ·Some BSB papers acquired by Boston Public Library through purchase of library of Thomas Pennant Barton from his widow.

1921 ·The "little red trunk" of BSB's *reliquiae* found by the Delafields stored away at "Montgomery Place" on the Hudson River.

1970–1972
·"Delafield collection" of BSB's papers and drawings purchased in installments by the American Philosophical Society.

Chapter I

Antecedents and Contemporaries

The Family

All living matter is influenced by what has gone before, and we humans in varied degrees share the characteristics of our ancestors: so we dwell awhile on the known abilities and inclinations of forbears. Environment and circumstance play their part equally. For most of his life Benjamin Smith Barton had poverty to contend with, and the pressure of debts assumed while studying at the University of Edinburgh impeded his ambitions to become America's leading naturalist.

Straightened circumstances had begun when Benjamin Smith Barton's father's inheritance in Ireland had been bound in debt. Then after years of faithful ministration to the parishioners of the Anglican Church in Lancaster, Pennsylvania, the 4Reverend Thomas Barton[30] had been caught in the crossfire of the American Revolution as a Loyalist to the King of England.

In those troubled times, allegiances were challenged. Lancaster had been settled largely by Scots and Irish, always at odds with the British crown, and by Germans and Dutch. Presbyterians and Lutherans loathed Anglicans, symbols of an increasingly despised far-off ruler. There were those who sought redress only from what they considered unfair taxation; others already pictured in their minds an independent nation. All who criticized the Mother Country, and Lancaster held many, called themselves "Patriots." Ardent among them were the Reverend Thomas Barton's oldest son, 5William, his son-in-law Paul Zantzinger, and the elder Edward Shippen. We can imagine some of the heated and bitter discussions and arguments that took place in homes as Bartons, Rittenhouses, and Zantzingers assembled. Close friend David Rittenhouse was slowly influenced toward the side of the Patriots, but the Reverend Thomas Barton remained a Loyalist. His father, Reverend Richard Barton, in Ireland, had written sermons on loyalty and patriotism, on duty to the ruling monarch, and Thomas himself had taken an oath of allegiance when in 1754 he had become a minister of the Anglican Church. Although he professed to believe that as a minister he should not enter into politics, in reality his very loyalty and his inclusion of a blessing for the king and queen in sermons brought enmity toward him. In 1778 the home granted him on the property of close friends, the Thomas Penns, was taken away, but he was permitted to sell the house and two lots, "Barton's garden," which he owned in Lancaster, a privilege later denied to many of the Loyalists. He was ordered to leave Lancaster, which was in the area under control of the Patriot forces, and to go to New York, still British territory, "not to return." Now independent, 5William was becoming established as a lawyer, and daughter 6Esther (Figure 9) had married Paul Zantzinger. Son 7Thomas, Jr. was the confused adolescent, so often displaying discontent with parental beliefs in an age of disillusionment with adults that often leaves its marks on future success.

Benjamin Smith Barton[31] came from proud Pennsylvanians, early settlers of rich backgrounds and intellectual prowess. On his father's side, great grandfather John Barton was born at Poulton, Lancashire, about 1653, but his family emigrated to Ireland during the

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30 Superscript on the left of a name denotes its position on Barton Genealogy listing (see Appendix III).

31 J. Ewan in *DSB*, where caution is suggested for some references; George Blumer in *DAB*, W. P. C. Barton, *Barton*, Bell, "Barton," *Colonial Physician*, "Medical Students," "Medicine," 51.

Protectorate, having remained loyal to Charles I and the Church of England, the Anglican Church. John entered Trinity College, Dublin, 3 August 1669, as a pensioner, became a Scholar at nineteen, earning his Bachelor of Science degree in the spring of 1674. He took his Master of Arts degree and was made a Fellow in about 1677. He then served as Mister of the Free School of Kinfare and lived as a devoted ecclesiastic, wholly dedicated to Trinity College. He became a Bachelor of Divinity in 1686, a Doctor of Divinity in 1692, and in the following two years he earned an LL.D. and finally became a Professor of Laws. On 21 March 1703 he was made Vice-Provost of Trinity, and that same year Dean of Ardagh,[32] Rector of Painstown, Kentstown, Ardulchen, and Davistown. His son Richard was born in 1705 at Painstown, County Meath, in the barony of Slane, known to be the richest grazing lands in Ireland, "of well wooded cheeks and hollows." Dean John Barton served the Diocese of Ardagh for six years, living calmly and contentedly, if we may believe his son Richard's tribute:

> *He ne'er tryd Fortune's giddy wheel of things,*
> *Nor drank, a wand'ring guest, of unknown springs;*
> *He nor the seas, nor martial musick fear'd,*
> *Nor in the Forum's hoarse contention shard.*[33]

The Rev. John Barton's *Art of Rhetorick* (London, 1634) remains a classic on the subject. To the reader he writes, "It had been easie to have my book confused and intricate with prolixitie," and "Rhetorick is the skill of using daintie words, and comely deliveries, whereby to work upon mens affections" (p. 1). Other examples are "A bird of the aire shall carry the voice," and "that which hath wings shall tell the matter" (p. 30); and "Gesture is the comely carriage of the bodie; whereof nothing is needfull to be spoken" (p. 35). Rhetoric as a subject for special emphasis was presented in leading schools far beyond Benjamin Smith Barton's day. The Reverend John Barton died in 1717, his will dated 3 April, proved 10th July.

Son Richard entered Trinity College 9 February 1721, aged fifteen, became a Scholar in three years and Baccalaureate in 1726, presumably for a Bachelor of Divinity, the degree he displayed in his many tracts, and a Doctor of Divinity in 1731. Among his many religious writings is one of particular interest for its stress on loyalty: *The Bramble; or the Old Fable of Jotham Applied to Present Times* (Dublin, 1746), 20 pp., taken from the biblical story of Jotham, whose power was usurped by Abimelech, bastard brother who represents the rebel and usurper; the Oak, the British Empire. The copy of this work in Trinity College, Dublin, is bound in with *A sermon preached in the Parish Church of Shankil in the Town of Lurgan, upon Wednesday the 18th Day of December Being the Day appointed for Fasting and Humiliation for the Sins of the Nation, in order to render ourselves Objects of Divine Mercy, and thereby to remove from us the Evils of Rebellion and Foreign Wars* (Dublin, 1746).

Two foreign wars and a domestic rebellion involving Catholics and Protestants lead Richard Barton to say that Protestants were not living up to their principles, were "shamefully ignorant, even of the principles for which they are hired to fight...are far from knowing the Purity of the Protestant faith compared with the Corruptions of Papacy; the Blessings of spiritual and civil Liberty compared with Superstition and Tyranny..." He insisted that early schooling is particularly important; Protestants neglected it; sin is the cause of all our calamities; lust a vice, hence the cause of all wars. "If there have been factions, let us forget them...True reason is Religion." Through such words he aimed to make Ireland contentedly Protestant.

Among his other six works, mostly religious but which suggest interests and influence passed down through his son Thomas to Benjamin Smith Barton, is his attempt to relate

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32 *Dublin University Calendar III, Being a special Supplemental Volume for the Year 1906–07* (London, 1907). Ardagh is identified in Samuel Lewis, *Topographical Dictionary of Ireland...* (London, 1857) 1: 40 as "Diocese of Ardagh."

33 *Lectures in Natural Philosophy...* (Dublin, 1751), [79]. See fn. 5.

natural and spiritual phenomena: *The Analogy of Divine Wisdom in the Natural, Moral, and Spiritual System of Things, in Three Discourses* (London, 1730). The copy presented by the author to Trinity College "near Dublin" has "XVII" inked in, the year of the death of Rev. Richard Barton.

> *It may be disputed by Naturalists, whether Minerals and Stones grow: But although it should be allowed, that many Congeries of Matter of each Kind received their forms and Consistence at the time of the Subsidence of Matter in the General Deluge, according to the Laws of Gravity; yet it should also be allowed, that some instances of much later Productions of Stones and Minerals may be admitted,"* [reads page 7, fn. c.]

He shows his familiarity with Nehemiah Grew's *Anatomy of Plants* (London, 1682) in a footnote on p. 18. One section of his work is titled *The analogy of divine wisdom, between material light, and spiritual knowledge. Between the general law of spiritual beings, and the general law of material things. Between the divine influence upon spirit by grace, and the divine influence upon matter by attraction. Between the universal aether and the infinite divine spirit.*[34]

Surrounded by the beautiful unspoiled countryside on his journeys to the family estate, on clerical missions, and on holiday, traveling by horseback or carriage, Reverend Richard Barton observed and contemplated. He became sensitive to the importance of mental recreation and the influences of the natural world on health. Summing up his outdoor observations and contemplations he wrote *Lectures in Natural Philosophy, designed to be a foundation, for reasoning pertinently, upon the Petrifactions, gems, crystals, and sanative quality of Lough Neagh in Ireland; and intended to be an introduction, to the natural history of several counties contiguous to that lake, particularly the County of Ardmagh...* (Dublin, 1751).[35]

Reverend Richard Barton's son was Thomas Barton (Figure 5) born in Monaghan, Ireland, in 1730 and graduated from Trinity College. He had expected as the eldest son to inherit lands held by the family in County Monaghan for nearly a century, but on his father's death in 1751 he found that family debts had wiped out his patrimony, and so he emigrated to America. As a young man in his twenties he taught in a small school in Norriton (present Norristown), Montgomery County, Pennsylvania. In 1752 he became a tutor in the newly established Academy and Charitable School of Philadelphia under the Reverend William Smith (1727–1803).[36]

Reverend Smith had spent several years in London with the Society for the Propagation of the Gospel in Foreign Parts. On coming to New York in 1751 as a tutor, he had written *A General Idea for the College of Mirania* (New York, 1753) outlining the kind of institution he thought best for a new country. "The making of good men and good citizens was to be its chief objective: history, agriculture, and religion were to be emphasized." It was intended to meet the needs of those who were mainly to follow a "mechanic profession." Copies were sent to Benjamin Franklin and to Reverend Richard Peters (1704–1776),[37] both trustees of the Academy, who, being highly impressed, invited Smith to join. First Smith journeyed to

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34 Quoted in Philip C. Ritterbush, *Overtures to Biology, the Speculations of Eighteenth Century Naturalists* (New Haven, 1954), 66.

35 Copy in De Golyer Library, University of Oklahoma.

36 H. E. Starr in *DAB*.

37 Richard Peters, born in Liverpool, came to Philadelphia in 1735 as provisional secretary and councilor to the proprietors, the Penns. He had been a deacon in the Church of England in 1730, and a priest in 1731. He was assistant to Rev. Archibald Cummings at Christ Church, Philadelphia, then in 1762 after a period at law and away from the Church while dealing with Indian affairs, he returned as rector to Christ and St. Peter's churches. Although early a supporter of the Crown, he was soon won over to the change with resignation (J. H. Peeling in *DAB*).

London where he received ordination as a deacon and became a priest in the Anglican Church, then returned as the first provost of what now became the College, Academy, and Charitable School of Philadelphia, teaching logic, rhetoric, and natural and moral philosophy. Luigi Castiglioni, traveling in the United States and visiting Philadelphia in 1787, heard this history: "The University [building] was formerly the Methodist Church...The New Building at Arch and Fourth Streets, erected for the famous evangelist preacher George Whitefield, had passed into the possession of 'Hell-fire' Gilbert Tennent and his Presbyterian flock before becoming the site of the Academy and Charitable School of Philadelphia and eventually the College of Philadelphia, today the University of Pennsylvania."[38]

In 1768 Smith was elected to the American Philosophical Society and served as vice-president. Unfortunately in his last years he became an alcoholic, but "with all his faults he was one of the ablest, most versatile Pennsylvanians of his day." Smith had found in Thomas Barton a kindred spirit, loyalty with a love of learning, a young man of intellectual promise. He encouraged Barton to go to England in 1754 to become ordained an Anglican minister and a missionary for the Society for the Propagation of the Gospel in Foreign Parts.

Thomas Barton had also enjoyed the fireside of the Rittenhouse farmhouse near Norriton, and there besides the company of David, "a man of immense genius, universal in its objects, modest, amiable, just...beloved by all who knew him," he met Esther Rittenhouse, an attractive gentle young lady one year his junior. She became his bride on 8 December 1753, at Old Swede's Church in Philadelphia, a compromise, perhaps, of his ancestral ties to the Church of England and hers with the Quaker upbringing from her mother and her Mennonite father. Esther accompanied her husband to England in 1754, where an important benefit was the friendship established with Thomas Penn, one of the proprietors of the Colony, and his wife Lady Julianna Penn. Shortly after their return William was born and, in two years, Esther.[39] Eventually nine children were born into Barton household, among them the subject of our tale, Benjamin Smith Barton.

York, Carlisle, and Huntington were missions on the frontier, and from 1755 until 1759 Rev. Thomas Barton ministered among them.[40] Appalled by the poor conditions, not only of the Indians, but also of the settlers, he wrote to the Rev. Richard Peters, "Not a house in twenty has a door with either Lock or Bolt on it," and few could afford guns.[41] Barton delivered a sermon on "the office and duty of Protestant Ministers and the right of exercising their public liberty in the handling and treating of civil and religious affairs, especially in times of public changes and calamity." This was published in a pamphlet as *Unanimity and Public Spirit...* (Philadelphia, 1755). It was approved by Smith and sent to the Archbishop of Canterbury.

The Indians had responded to the devoted attention of the earnest Christian missionary until General Braddock's defeat exposed the area to hostile Indians from the north, spurred on by the French, and turned the local Indians against the white man's religion. The prospect of the victory of Roman Catholicism was almost as great a dread to the usually tolerant Protestant minister as the fear of murderous Indians. He joined in marches whenever there was an alarm, for he now had three children to protect, David Cradock being born in 1758. That year Rev. Barton joined a force under General Forbes, nominally as a Chaplain, but actually having volunteered as leader of a group of his own young parishioners. General Armstrong complained of this spirited combination of activities to his General, Washington.

By 1759, British successes restored some confidence to frontier settlers, and Barton was transferred to the Anglican Church in Lancaster, where he officiated for twenty years. He also served the Welsh community of Carnaervon and the Irish of Pequea, each about twenty miles

38 Pace, *Castiglioni*, 266.

39 W. P. C. Barton, *Rittenhouse*, 101 and passim. W. Carl Rufus in *DAB*; Brook Hirdle in *DSB*.

40 Rose G. Barton, "Lancaster."

41 Richard Peters papers, HSP.

from Lancaster, and occasionally at New London and White Clay Creek, each a greater distance.[42]

Lancaster in 1794 was described as "a pretty considerable town, encreasing fast, and growing rich, and which had the reputation of possessing the best and most intelligent society in America." Rev. Barton became active in the intellectual life of the community, serving on the board of the library. Thomas Penn wrote from London, 11 February 1762, to the directors of the Library Company, "I received a very sensible Pleasure in being informed by Mr. Barton, that a number of the principle People of Lancaster, and the Country about that Town, had entered into an Agreement...to form a Library."[43] By 1766 the Charter, Laws, and Catalogue of Books of the Juliana Library Company, named for Penn's wife Lady Juliana—also for whom Rev. Barton's daughter Juliana Susanna had been named—reported fifty-eight subscribers.

In this stimulating atmosphere the Barton children spent their early years. Benjamin Smith Barton was born 10 February 1766 and was baptized and named for Reverend William Smith. That year Rev. Barton officiated at the marriage of his close friend, David Rittenhouse, to Eleanor Colston. That same year held its sad events, too. David Cradock Barton died at the age of eight of smallpox, and Esther suffered a long illness.

In the outlying areas and poorly protected settlements, marauding Indians had increased their attacks, and in December of 1763, fifty-seven vigilantes, young Scottish-Irish of the frontier settlement of Paxton, suddenly descended on the Almshouse in Lancaster where twenty defenseless friendly Christian Indians of Conestoga had been housed for protection. Savagely they hacked to pieces men, women, and children. Reverend Barton, appalled at the brutality of the attack, yet having a certain sympathy for the beleaguered settlers, composed a thirty-four page tract detailing his feelings in this full title: *The Conduct of the Paxton-Men, impartially represented; The Distress of the Frontiers, and the Complaints and Sufferings of the People fully stated; and the Methods recommended by the wisest Nations, in such Cases, seriously Consider'd. With some Remarks upon the Narrative of the Indian Massacre lately publish'd. Interspersed with several interesting Anecdotes, relating to the Military Genius, and Warlike Principles of the People call'd Quakers: Together with proper Reflections and Advice upon the Whole. In a letter from a Gentleman in one of the Back-Countries, to a Friend in Philadelphia* (Philadelphia, 1764).

"I should have continued," wrote Barton, "a secret mourner...had not the conduct of your City Quakers provoked me to speak..."

As Thomas Barton and the settlers saw the problem, the Quakers dominated the legislature in Philadelphia, embraced the "Barbarians with more tenderness and Hospitality than ever they show'd to their distressed Countrymen and fellow subjects." Treaties with the Indians, the settlers felt, had often been made at their expense. The Indians, on the other hand, often loitered about the settlements in their ancestral territory, creating nuisances. The Indians, he wrote, "scoffed at the divisions within the Government." The settlers felt that the Quakers' "Scruples against War" were the root of their calamities since Indian atrocities could not be dealt with. The Quakers had not always opposed violence. "I shall now conclude, Sir," wrote Reverend Thomas Barton to an unnamed Philadelphia friend, perhaps Rev. Richard Peters, "with this Request to you, that you will advise your visionary *Quakers* and Don *Quixotes*...to Remove the Indians, or whatever else may create jealousy, and give them cause to murmur. And then we may expect to feel the happy Effects resulting from Liberty & Law..." Penn had called for a trial of the rangers, but frontiers people were too sympathetic. They

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42 Jeffries, "Barton," passim; F. M. Barton, "Rev. Thomas," 101-104.

43 E. V. Lamberton, "Colonial libraries of Pennsylvania," *Pennsylvania Mag.* 42 (1918): 228. B. S. Barton wrote of his father that he was "one of the principal founders of the Juliana Library Company" at Lancaster; and "cultivated with considerable success, some of the branches of Natural History, at a time when these studies were almost neglected in Pennsylvania." Rev. Thomas Barton also formed a mineral collection (*PMPJ* Suppl. 3 [May] 1809: 309 n) and collected fossils.

nurtured a hatred for Philadelphians who controlled the legislature and would not vote money for the defense of frontier settlements. Rev. Barton had expressed his fears in 1757 to the Society for the Propagation of the Gospel over "the present turbulent and disturbed situation," concluding with "but this is a subject on which it is not *safe* for a man, who has not virtue enough to make him a Martyr, to speak or write freely here."[44]

For some time he had contemplated moving to Montreal where he hoped to wean the inhabitants away from "Popery," and he pressed for the establishment of a bishopric in America. This proposal of a bishopric roused non-Anglicans: the Dutch, German Lutherans, the Scottish Presbyterians, and the Irish Catholics in the area. Their preachers in pulpits and press roused an antagonism that carried over into the War for Independence and influenced attitudes toward the Loyalists. To relieve the discouragement of Reverend Barton and to ease the financial burdens of his growing family, John Penn granted him the use of the income of "Conestoga Manor," one of the Penn farms.[45] With his children Reverend Barton walked through pristine woodlands, acquainting them with familiar living creatures and no doubt talking to them of the wondrous manifestations of God. From time to time he sent mineral specimens to the Penns in England. Later, Benjamin Smith Barton would recall that his father had a collection of minerals, "made near forty years ago at a time when he paid more attention to this part of natural history than, so far as I know, any other person in the (then) colonies." The greater part of the collection sent to England had fallen into hands of those who did not know its value. "It has never been heard of, or mentioned in any of the printed accounts of minerals, that I have seen."[46]

In a footnote in his chapter on Mammoth remains in *Archeologiae Americanae*, 39, Barton noted that "Many years since, my ever-venerated father...transmitted to his correspondent, Lady Juliana Penn, some precious specimens of bones of the Ohio monsters; and along with specimens, notices concerning them." His nephew, William P. C. Barton, also remembered that "There is moreover in the family, and I believe now among the late Dr. Barton's manuscripts, a letter from Linnaeus to the doctor's father in which he tells him that Cuscuta europaea (a little twining parasitic plant) will probably be found in America...and should be called Cuscuta Americana."[47]

A new opportunity for showing goodwill toward the Native Americans came to the devoted teacher. At the request of Sir William Johnson, Superintendent of Indians for the northern colonies, Rev. Barton welcomed into his home the illegitimate half-Mohawk William of Canajoharie, whose Indian name was Tagchenuto, born about 1750. "Little Will" had attended Moor's Indian Charity School, a Congregational institution in Lebanon, where Rev. Eleazar Wheelock was headmaster—after moving, the school became Dartmouth College—but he was sent home because of his "pride and violence of temper." For almost a year Barton was encouraged by the youth's progress: perhaps he could establish and operate a school for Indian youths. He wrote to Johnson, 22 July 1767, that his progress in arithmetic was "really surprising. He will soon write a hand fit for Business. I cannot say much in Favour of his Genius, or Quickness of Apprehension; but his Application, which is indefatigable, makes up for every Deficiency of this Kind—I have the most favourable Expectations of him." Six months later, 2 December 1767, he wrote that William had a "Love of reading not common in Persons of his Standing—every Book that he can lay his Hands on has his Perusal [but] his genius is rather heavy than sprightly. The progress William has made...surprizes every one...In his Disposition, he is naturally obliging, generous & good-natured, tho' he appears to have Something of the sullen, reserved & unsociable in his Temper—He has a Kind of rustick

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44 Young, "Loyalist," 37. Also Jacob Isidor Nambert, *Authentic History of Lancaster County in the State of Pennsylvania* (Lancaster, 1869), 180–190.

45 Young, "Loyalist," 33–42.

46 Barton, *Discourse*, 86.

47 Barton, *Elements* (1836), 12 n. We have, however, found no trace of the Linnaean letter. Can it be among the Thomas Pennant Barton papers at BPL?

Diffidence or Bashfulness, which is injurious to him, & of which I have not been able to break him, tho' I admit him to my own Table when I have no strange Company, with a Design to rub off some of his Rust—Upon his first coming to Lancaster he challenged almost every Person he met with; & box'd half the Young Dutch Men in Town. Had he lived at Rome in his Days of Glory, when Wrestling & Boxing were brought upon the Theatre as publick Diversion, he would have been deem'd an Athletick Champion, & entitled to the prize at every Exhibition...I have prevailed upon him to lay them aside, So that he is now as peaceable a Lad as any in the Place. My Children are all exceeding fond of him, & my eldest son [William], who is a good Scholar, is constantly instructing him at Night—He has a Thirst for Knowledge that carries him rather into Excess in his Diligence and Application.—A year, from this Time, will qualify him sufficiently to serve as a Secretary, to transcribe your Papers, copy your Letters &c. or,...to serve as an Usher in one of the Indian Schools..."

Unfortunately conditions changed, and the cause becomes clear. Again Reverend Barton wrote from Lancaster 25 March 1768:

> *...I am sorry that William should be the Bearer of this Letter—But ever since the turbulent & disordered State of the Back Counties, occasioned by the Murder committed upon several Indians by one Stump, & the Rescue of that Villain, & the lawless insolent Behaviour of some of the Inhabitants, in Consequence thereof, he has relaxed in Application to Study, been uneasy in Mind: and from the most diligent, contented, happy Lad, is become the most dissatisfied, sullen, careless Creature imaginable—He immediately solicited Leave to return Home—I used every Argument to prevail with him to remain here for Six Months longer, as he had begun the Elements of Geometry, in Order to learn Surveying, which I thought might be of Advantage to him; & which he would soon have understood— But notwithstanding his Situation in my own Family (which I hope he will do me the Justice to own, was comfortable and easy) I could not succeed with him..."*[48]

William of Canajoharie knew no more years of happiness and progress, for he became a drunkard. Early success with him inspired Rev. Barton, however, and so in 1772 the Society for the Propagation of the Gospel granted him funds to give instruction to poor children including blacks.

The year 1774 brought with it grief over the death of his wife Esther, leaving him with eight children, Benjamin Smith Barton then eight years old. A newspaper of the day carried this account:

> *It is not easy to do justice to the character of this amiable and excellent woman without incurring the suspicion of flattery, among those who did not know her. Blessed with a superior understanding, a sound judgment, a peculiar sweetness of temper she always knew what was proper conduct on any occasion and how to be agreeable in every company. But she considered it to be her highest honor, as it was her chief desire to shine in her own family as a dutiful wife and tender mother; setting an example of virtue and economy to her children, and preferring the calm walk of domestic happiness to all those fantastic and adventitious joys in the presence of which too many waste their precious time.*[49]

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48 Batchelder, "Footnote," 227-233.

49 *Lancaster Hist. Soc. J.* 5 (1920): 48; quoted in Jeffries, "Barton," 55.

That year Rev. Barton had the feeling that after the meeting of the First Continental Congress in Philadelphia it was useless for him to continue to report to the Society for the Propagation, as letters he had sent had obviously not reached London. In 1775, because of the interruption of trade and the unfavorable low exchange, his income was sadly reduced.

> *The Rage of the time was likely to ruin this once happy country. Where it will end is uncertain,"* [he complained in a letter carried to London by his oldest son William, who was to study Law at the Temple]. *Matters have now got to such a crisis that it is neither prudent nor safe to write or speak one's sentiments. Would to God an accommodation would take place! Everything here, at present, wears a dreadful aspect. Religion and all the arts of peace are lost amidst the horrid apparatus of war.*[50]

While on a trip to New York visiting his younger brother, William, Reverend Thomas Barton married Mrs. Sarah (Bard) De Normandie, daughter of Samuel Bard and daughter-in-law of Dr. John Abraham De Normandie of Bristol, Pennsylvania, one of the colonies' earliest chemists.[51] After an arduous trip through Bristol and Philadelphia over rough roads, Barton having to get out every so often to keep the carriage from tipping over, the couple arrived to a warm welcome and approval at the Lancaster home on the southeast corner of Orange and North Lime streets. "Mr. Barton was visited by all the gentlemen of the Town of every denomination both Jews and Gentiles & Sunday went to Church." The *a cappella* choir, made up probably of British prisoners of war quartered at the Barracks, made "music beyond anything I ever heard of Vocal music," wrote Mrs. Barton. Sally Bard, her younger sister who had accompanied the newlyweds, also wrote of the visit:

> *In the night we were waked with a most delightful Seranade under the window consisting of two Violins one flute and a hautboy played extremely well, a Compliment to Mr. and Mrs. Barton.*

She touchingly described her new brother-in-law:

> *I thought when I was in Bristol my affection to Uncle Barton was very great, but it has encreased daily since I have known him at home in his own house, you there see him the best of husbands the most affectionate Parent and kindest master and I may add the tenderest relation...But he never appears to greater advantage than in the Pulpit if I am any judge his sermons quite equal Dr. Smith's accompanied with a most agreeable delivery and then flowing from a good heart they must have a good effect upon his hearers.*

For ten days Sarah accompanied her husband "on horseback for near two hundred miles," on a visit to Pequay and Caernarvon. "The strong attachment and affection which these people shewed to My Dear Mr. Barton & the Church afforded me much satisfaction—I do not know how it will be possible for him ever to leave congregations so much devoted to him tho it will probably come to that at last,"[52] a foreboding of things to come.

By November of 1776 Rev. Barton had been obliged to shut up his churches:

> *...to avoid the fury of the populace, who would not suffer the Liturgy to be used, unless the Collects and Prayers for the King and Royal Family*

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50 Young, "Loyalist," 38.

51 Langstaff, *Bard*, 324, 329, 334.

52 Anonymous, "Bartons 1776."

> *were omitted, which neither my conscience nor the declaration I made and subscribed, when ordained would allow me to comply with; and although I used every prudent step to give no offense even to those who usurped authority and rule, and exercised the severest tyranny over us, yet my life and property have been threatened...*[53]

He continued to meet with his parishioners at their homes catechizing and christening. In May 1778 he petitioned for himself and other Protestant Episcopal ministers and missionaries that they be given the "protection and liberty of conscience" allowed even to "Popish Missionaries" by the "Great Mogul" and by "potentates throughout Asia and Africa, the Philipine Islands," and the Ladrones.[54]

To his sorrow his own son William and his son-in-law Paul Zantzinger took up the cause of the Patriots. Yet they and many friends pleaded for him hoping he could eventually be persuaded to take the oath of allegiance to the United States. Dr. William Smith, who had wavered in his alliances, sympathized with his longtime associate and wrote to Thomas Penn in London:

> *Mr. Barton is indeed a most worthy & useful missionary. He is the Darling of his People, & has been obliged for a Twelvemonth past sometimes to act as their Captain & sometimes their minister.*[55]

Not granted the protection he sought, Rev. Barton petitioned the Council for leave to sell his house and lots and to move out of the state to British-held New York. The petition was granted, and on 26 August 1778 Paul Zantzinger purchased the two city lots, "Barton's garden," and his house. The income from the 500 acres of Penn's Conestoga Manor was taken away, since he "had gone over to the enemy." With two Conestoga wagons carrying their possessions the family left Lancaster. The parishioners of Caernarvon and Pequea, who had testified to Barton's "virtues and exemplary character," and that "as a member of the Community he hath always demeaned himself as a prudent, moral man, never intermeddling (that we know of or have ever heard) with any affairs incompatible with his calling or function," showed their "affectionate relation" by paying up all arrears due to him, and made him a present of fifty pounds. The Council, on granting his departure, had stipulated that the children must stay and be educated in loyalty to the United States of America. The six younger children, one of them Benjamin Smith Barton, would live in a house in Caernarvon under the care of Polly Thornbury, devoted housekeeper to the family for seven years. Polly eventually joined the household of Juliana Susanna Barton after her marriage to Judge White. Rev. and Mrs. Barton hoped eventually to return, or to send for the children to join them in England, where, Rev. Barton wrote from New York, 8 January 1779, he hoped he would find "some humble appointment," quitting "this ungrateful country altogether."

Opening an old wound in the association of father and son, and, no doubt reminiscent of days of argument between the two, Barton received a note in 1779 from John De Hart of Elizabethtown, New Jersey, on William's return from England, and of his desire to see his father, and to seek freedom for him. Rev. Barton answered: "You are kind enough to tell me, that my son requests me to return to my parish. What can he mean by this request, I am totally at a loss to understand," and he lamented:

> *How melancholy and distressing is my situation! Separated from 8 children, and 3 congregations, to whom I am bound by duty, gratitude, and*

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53 *Annals of the American Pulpit* 5 (New York, 1859): 169, quoted in Jeffries, "Barton," 58.

54 Young, "Loyalist," 40.

55 Quoted in *Pennsylvania Mag.* 95 (1971): 432.

> *every tie of affection!...no choice was left me, but either to take the oath, or to suffer a painful separation from my dearest connexions...that many conscientious and good men have conformed to the test-act, yet my own conscience always revolted at the abjuration part of it...I now suffer banishment from all that are most dear to me; with an interdict, 'not to return again.'*[56]

His longtime firm friend David Rittenhouse wrote to tell him of William's return from London, and on 15 Feb. 1779 Barton answered:

> *To see, and to be united with my children, is my most earnest wish; but how that happy event is to be obtained, I know not; If my son should choose to come to Elizabeth-Town, perhaps I might be indulged with a flag, to have interview with him there.*[57]

Paul Zantzinger, serving in the Patriot's army in New Jersey, also applied to visit his father-in-law with William. Permission was at first denied to both of them. William, however, obtained permission in April of 1780, just one month before his father's death on 25 May, from the Supreme Executive Council of Pennsylvania, chiefly through the friendship of General Joseph Reed, then President of the Council, and sanctioned by General George Washington. William met his father for the last time, and his step-mother in Elizabethtown, New Jersey, but he has left us no description of the sorrowful occasion.[58] "Death delivered him from the anguish caused by the order that his children, in common with those of all men similarly circumstanced, should be educated in loyalty to the United States of America."[59]

Reverend Thomas Barton had been honored in 1760 with a Masters' of Arts degree from the College of Philadelphia, his old Academy, and in 1770 King's College in New York also honored him. He was interred in the chancel of the chapel of St. George's Church, New York. After that church burned, his remains were moved to the new St. George's Church on Beekman St., New York. William wrote on 19 June 1814 to Benjamin Smith Barton, then living on Chestnut Street, Philadelphia, of plans for a tablet to commemorate the parents, with the family coat of arms serving as a heading for the epitaph, the motto "Fide et Fortudine."[60]

A portrait of the Reverend Thomas Barton appears in Cassel, *Rittenhouse*. opposite p. 215 (Figure 5). It carries what appear to be the initials WE. In a letter from Thomas Barton's son Matthias to Benjamin Smith Barton, dated only "Sunday night" he wrote that "William Woollett has made an excellent likeness of our Father from an old painting."

Sarah De Normandie Barton, "our Mother," continued her interest in the Barton children. She wrote William that her father Dr. De Normandie, would stand ready with financial help for "Benny's" return from London in 1789.

Once, Benjamin in his writings referred to his "revered father," and again in 1814 as "my ever-venerated father," but other than in the mention of minerals and fossils, a commemorative tablet, and the portrait, there is no further mention in the family letters.

William's bitterness softened over the years so that he negotiated the installation of the tablet in the new St. George's Church in New York. What had been Benjamin's feelings through adolescence we can only surmise.

Left in Pennsylvania among patriots, Matthias, Thomas Jr., Juliana Susanne, Richard Peters, Benjamin Smith, and David Rittenhouse Barton were all inculcated with the ideals of the Enlightenment, strengthened by lessons in the advantages of a free society, and loyalty to

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56 W. P. C. Barton, *Rittenhouse*, 279–280.
57 W. P. C. Barton, *Rittenhouse*, 281.
58 W. P. C. Barton, *Rittenhouse*, 281.
59 As interpreted by Young, "Loyalist," 42.
60 Barton papers, APS.

the new government. Benjamin through the years often displayed in his works his strong affection for the new Republic and, especially in writing to European correspondents, his pride in being an American.

From family letters and Benjamin's fragments we picture close family ties and concern for each others' welfare. As always there is demonstrated Benjamin's ceaseless effort to accumulate natural history information from whatever source, toward his grand plans for his natural history of the United States.

Our accounts of most family members reflect the often scant information available, and the detail we relate concerns primarily the story of Benjamin Smith Barton. Carried on beyond his death in 1815 it records his immediate influence, and the Barton-Rittenhouse-Penington inheritance of ability. Understandable for the time, there is little information on the women of the family. If there were serious discord, it does not appear in the family letters.

Particularly with the children of Richard Peters Barton and Martha Walker Barton, it is difficult to decide from records whether the middle given name represents a genealogist's attempt to distinguish members of several families, or whether the middle name was truly given by parents. The repetition of the first given name in a family reflects the sad prevalence of infant mortality, and the carrying on of the memory of the lost infant.[61]

Several of Reverend Barton's books were inherited by grandson Thomas Pennant Barton, and are in the Boston Public Library.

The Rittenhouse Alliance

While teaching in Norriton in 1751 [5]Thomas Barton became a close friend of a promising young man, [60]David Rittenhouse (1737-1796), two years his junior, who lived on a nearby farm in a family of Dutch papermakers.[62] William Rittinghuysen, Mennonite minister, had come from Arnheim, Holland, about 1690.[63] With the printer William Bradford and two others he built and operated the first papermill in America, on Monashoe Creek off Wissahickon Creek, then not far from Philadelphia. In 1703 William Rittenhouse (for so he changed the spelling of his name) had been elected the first Mennonite Bishop in America, but because none of the ministers in Holland who had elected him could cross the Atlantic, he continued as a minister and papermaker, donating the land for the first Mennonite Church in America. He continued the mill, acquiring full ownership after Bradford left for New York. His second son [61]Nicholas Claus carried on, leaving the mill to his two sons, [62]Matthias, David's father, and [63]William David. In the stone house built by his great grandfather, David was born 8 April 1732, but most of his growing years were spent on the farm near Norriton, which his father had purchased after remaining with the papermill for about nine years. Matthias in 1727 had married Elizabeth Williams, daughter of an English family from Plymouth. A Quaker, although she had little education, she was of marked intelligence. In fact, David's brother [67]Benjamin believed that David's genius was inherited more from his mother and her family

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61 Cassel, *Rittenhouse*, passim.
Note that Cassel, p. 215, under "Esther Rittenhouse tells us that Mrs. Barton was not with [5]Rev. Barton in New York, nor was she permitted to visit him, and that she and the children were in Burlington, New Jersey; that Polly Thornbury who was taking care of the children, "an humble friend of the family, went *on foot* from Burlington to New York, got through the lines, went to the bedside of Rev. Mr. Barton, nursed him, and closed his eyes in death." Polly was undoubtedly a heroine to take on the care of six young children, but we conclude from William Barton, *Rittenhouse*, and from Young, "Loyalist," etc., that Polly and the six children remained behind at Caernavron until William was able to make plans for them.
Lee Normandie has been given in some historical accounts as the second Mrs. Barton's name. Can this have been a misreading of someone's penmanship? The De becoming Lee? And "Sarah Thornbury De Normandie" may have confused someone to write that Polly Thornbury rather than Sarah De Normandie attended the dying Thomas Barton. (*Pennsylvania Mag.* 43 (1939): 240.)

62 Brooke Hindle in *DSB*, and in Hindle, *Rittenhouse*; W. Barton, *Rittenhouse*; W. Carl Rufus in *DAB*; Cassel, *Rittenhouse*, 137-213 with illus., quotations, and "glaring errors," Hindle, *Rittenhouse*.

63 Marian Parris Smith in *DAB*.

than from his father. Matthias and Elizabeth had fourteen children, the first being "Esther, who was to become the bride of Thomas Barton, and the second, David. Then came Anne, "Benjamin, who often worked closely with David, Margaret, Andrew, Jonathan, Eleanor, Mary, and Elizabeth.

David's Uncle William recognized his nephew's abilities, and together they studied Newton's *Principia* and *Poor Richard's Almanack*. On his death William left his tool chest and some books to David, who continued his interest, soon "mastering" Newton and developing his exceptional abilities in mathematics and mechanics. David had little schooling, but spent the hours he was not engaged on the farm in study. That his mind, while behind the plough, was often filled with other ideas was noticed by his brother Benjamin, who often found figures chalked onto the plough handle. Clockmaking particularly interested David, his studies enabling him to construct the tools necessary for opening his shop on the farm at Norriton. About this time he initiated a lending library in Norriton, which was named in honor of Lady Juliana Penn.[64] It may have been here that he became acquainted with his close friend. Thomas Barton, two years older, became an admiring encourager, a member of the library board, procuring books from England and giving David financial aid. While Thomas Barton was teaching in Philadelphia he introduced Rittenhouse to the College community, including the Rev. William Smith,[65] who also became an ardent supporter and collaborator. Rittenhouse had constructed a telescope in 1756, and in March of 1767 he sent a description of his "imaginary machine," his orrery, to Rev. Barton. Smith on reading it sent it to the American Philosophical Society, where it was published in the first volume of the *Transactions* the following year, and Rittenhouse was elected to membership in the Society. This was the first, and at that time, the only clockwork model of the planetary system in the Colonies. It was sold to Princeton in 1770 for £300 to the chagrin of the College of Philadelphia, so that Rittenhouse eventually constructed a second for the college.[66]

Rev. William Smith had been elected to the American Philosophical Society in 1768 and not long after had been appointed chairman of a commission to undertake the observation of the transit of Venus on 3 June 1769. For one of the three observations the Society planned, Rittenhouse built an observatory on the Norriton property, where he was to be one of the three assistants to Smith, the object being, with European groups, to determine more accurately the distance between the Earth and the Sun.[67] Rev. Thomas Barton came over from Lancaster for this important event, in fact, since the Sun's position was so high, to look through the eyepieces one had to lie flat on the ground, and so Thomas had supported David's head.

David's brother Benjamin was no doubt among the enthusiastic participants. He also had mechanical skills, becoming an excellent maker of chronometers under David's direction and surveying much of the Norriton neighborhood using a chain that he had devised.[68] The parents lived in the house on Matthias's second farm purchased near Worcester, not far from Norriton, and on his father's death Benjamin inherited the farm. A patriot, he was requested 9 February 1776 by the Committee of Safety to operate a manufactory of gun-lock making. After studying law he was appointed in 1791 as Associate Judge of the Court of Common Pleas. In 1797 he helped design a bridge over Perkioming Creek, on the road between Reading and Philadelphia, and was wounded at the Battle of Brandywine in 1812. "Uncle Benjamin" at sixty-seven was living in Philadelphia, since Matthias in 1807 sent a check for thirty-five dollars to Benjamin Smith Barton there for him. He remained active in his old age, often walking six miles before breakfast.[69]

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64 The surviving books are now in Lancaster Public Library.

65 *Pennsylvania Mag.* 56 (1932): 193–224, portrait bust. Hindle, *Rittenhouse*, 39–42, and passim.

66 APS "Minutes," 3. W. P. C. Barton, *Rittenhouse*, 198–205.

67 W. P. C. Barton, *Rittenhouse*, 160–188, a prolix account.

68 W. P. C. Barton, *Rittenhouse*, 138–139.

69 Barton papers, APS.

David Rittenhouse wrote to Rev. Barton on 26 July 1769, after public announcement of the results of the celebrated event:

> *I have delineated the Transit, according to our observations, on a very large scale, made many calculations, and drawn all the conclusions I thought proper to attempt, until some foreign observations come to hand, to compare with ours; all of which have been, or will be laid before the Philosophical Society. The Doctor* [Wm. Smith] *has constantly seemed so desirous of doing me justice in the whole affair, that I suppose I must not think of transmitting any separate account to England.*[70]

One of the "foreign observations" alluded to was to have been made on Captain James Cook's First Voyage in Tahiti, but there it had been cloudy. When the observations were reported and calculations checked and corrected, Rittenhouse won instant recognition as an able astronomer.

It was about this time that his wife Eleanor Colston died. About two years later "Hetty Barton in her *Commonplace Book*[71] accused him of being in love. He married Hannah Jacobs on 31 January 1772.

In 1770 David Rittenhouse moved to Philadelphia to open a shop for the manufacture of optical and mathematical items and to build a brick home at Arch and Delaware (7th) Streets.[72] He was appointed to a commission for making the Schuylkill River navigable and worked on a number of boundary lines, introducing the spiker-line in surveying equipment. On the survey of the Pennsylvania-Ohio boundary in 1785 his nephew Benjamin Smith Barton accompanied him.

The son of a Mennonite father and Quaker mother, Rittenhouse was opposed to independence and at first a Loyalist, but gradually he accepted the coming struggle, not diminishing, however, his admiration and affection of Rev. Thomas Barton. During the war he worked with Thomas Paine on committees and on experimenting with materials that might prove useful to the army. He found he could, for example, substitute iron for lead in the clocks made in Philadelphia. He helped draft the Pennsylvania Constitution of 1776, as one of his political activities.[73]

The College of Philadelphia had given him an honorary degree in 1767, and the College of William and Mary in 1784. About 1767 he was elected to the American Philosophical Society, becoming its librarian, then its secretary, a vice-president, and he succeeded Benjamin Franklin as President 1791–1796. As a member he had at first been enthusiastic about competing for the Magellanic prize, which had been established for the "best discovery or improvement in navigation or natural philosophy." He thought of work to improve astronomical timekeepers, but his distracting life in the city kept him from the necessary experimenting and study, so he did not submit for the prize.[74] In 1795 he was honored with membership in the Royal Society of London. Of particular significance to his nephew Benjamin Smith Barton was his appointment as a trustee of the College of Philadelphia in 1791. It was that year that Charles Willson Peale painted his portrait (Figure 6). Rittenhouse served as director of the mint from 1792 until he resigned in 1795 to be succeeded by Benjamin Rush.[75]

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70 W. P. C. Barton, *Rittenhouse*, 174, fn. 65.

71 At University of Pennsylvania.

72 W. P. C. Barton, *Rittenhouse*, 208–209.

73 Brooke Hindle in *DSB*.

74 Rittenhouse had aided Robert Patterson who won an award for coating lightning rods with blacklead. APS "Minutes," 211; Hindle, *Rittenhouse*, 326.

75 Cassel, *Rittenhouse* [5], frontispiece portrait.

David's older daughter [75]Elizabeth ("Betsy"), born in 1767, married Jonathan Dickinson Sergeant, State Attorney General, "Cordial friend of American liberty," and one-time Loyalist persecutor, a widower with eight children. After her husband's death of yellow fever, Elizabeth moved into her father's home with her three children, [77]Frances, [78]Esther, who was to marry her second cousin [13]William Paul (Crillon) Barton, and [79]David.

Rittenhouse's second daughter, who would have been named for 'Rev. Thomas Barton had she been a boy, was named for Mrs. Thomas Barton. [76]Esther ("Hetty"), and her husband, Nicholas Baker Waters, M.D., had lived in the Rittenhouse home until young Dr. Waters had become established in practice, then they moved a few doors down the street. On Dr. Waters's death in 1794 she and her young son [80]David Rittenhouse Waters moved back. One can picture two lively grandsons of the same age, and the two young girls, roaming the house. David Rittenhouse gave up his scientific pursuits about this time, devoting himself to community interests. He had written to his second wife Hannah from Wheeling Creek, Ohio, June 30, 1785:

> *I was the first that caught a young fawn and had hoped to have sent the beautiful little animal a present to [76]H[etty]. We kept it about a week, and it became quite tame, but our cows ran away, and it was starved for want of milk...H. shall at least have the skin.*[76]

As one of Philadelphia's leading citizens, in 1790 with Thomas McKean, Pennsylvania's Chief Justice, and Thomas Willing, President of the Bank of America, David was a pall bearer for Franklin. Franklin had willed Rittenhouse his microscope. Although he and Dr. William Smith were each requested to deliver the eulogy, it was not in Rittenhouse's literary ambient, and so his old friend William Smith, a federalist and antagonistic toward Franklin, finally recounted the nation's praise. Benjamin Rush was selected by members of the American Philosophical Society to deliver a eulogy that was read before that body on 17 December 1796. A copy was unanimously requested for publication in the Society's *Transactions.*[77]

Rittenhouse became ill on 22 June 1796 of what Dr. Frederick Kuhn and Benjamin Smith Barton decided was cholera and died four days later. Thomas Jefferson spoke of him:

> *He has not indeed made a world; but he had by imitation approached nearer its maker than any man who has lived from the creation to this day.*[78]

To Hannah and to his two daughters he left his Philadelphia property. To Elizabeth he also bequeathed £500 with the interest of an unpaid loan to Isaac Snowden of Philadelphia. He had given Esther the same amount of money during the early years of financial struggle while Dr. Waters was getting established. She also purchased one of their uncle Matthias's farms. To his sister Eleanor, married to Daniel Evans and with four children, he left the farm near Norriton for her use so long as she should live. Benjamin Smith Barton was one of the witnesses to the signing of the will.[79] He had evidently hoped for some financial help from his uncle while he was feeling the pinch of penury at University of Edinburgh. Although David had been well-off, he may have felt the burden of supporting his younger daughter Esther and her husband, an expense the young medical student had no knowledge of. He was able, however, to overcome whatever resentment he may have felt, and over the years he enjoyed many an hour visiting in his uncle's home chatting with him and with distinguished guests. Undoubtedly over later years Uncle David used his influence with the Hospital and University to his nephew's advantage.

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76 W. P. C. Barton, *Rittenhouse,* 311.

77 W. P. C. Barton, *Rittenhouse,* lxxiii-iv, fn. 53.

78 Jefferson, *Notes,* 120.

79 Cassel, *Rittenhouse,* 164-166.

Rittenhouse's portrait was immortalized by two miniatures, and with the paintings by Charles Willson Peale and John Trumbull. There is also a bust by William Rush in the Philadelphia Academy of Fine Arts. A bronze medal was struck off by Barber, an engraver at the mint.

> *The books and apparatus* [an orrery, a pair of globes, and a reflecting telescope – obviously a reflection of Rittenhouse's presence] *belonging to the Company* [80] [were] *...cased up, and not opened for the perusal and inspiration of the members from the year 1776 till the year 1784 inclusive.*

An exhibit of Rittenhouse memorabilia[81] lists among the artifacts miniatures of both Elizabeth and Esther, and two of Rittenhouse. All of David Rittenhouse's publications, mathematical and astronomical, appear as pamphlets or in the *Transactions of the American Philosophical Society*; in fact most of the first volume is filled with his papers. He contributed "Experiments on the Gymnotus electricus" to Benjamin Smith Barton's *Philadelphia Medical and Physical Journal*.[82]

Brook Hindle, "Bibliographical Note," in *Rittenhouse*, 367–375, gives a rich account of sources of Rittenhouse writings and writings about him. W. P. C. Barton, *Rittenhouse*, published in 1813, seventeen years after his revered uncle's death, enters into a philosophical account of great men of history, pages [iii]–lxxviii, with much in notes in small type. His preface also emphasizes the importance of biography as a record of achievement and influence on society as shown by details of the life and accomplishments of his subject. On page lxxvi, he quotes Rev. Hugh Blair (1718–1800), who wrote that a biography affords the reader "the opportunity of seeing the characters and tempers, the virtues and failings of eminent men, fully displayed...it is from private life, from familiar, domestic, and seemingly trivial occurrences, we often receive the most light into the real character."[83] In a prolix account of a man he greatly admired, William Barton wove in the story of his own father, Reverend Thomas Barton, whose influence on Rittenhouse was great, and references to many other important characters of the time. Unfortunately, he made no index. In the Appendix to *Rittenhouse*, B. S. Barton reproduces Rittenhouse's "oration delivered 24 February 1775 before the American Philosophical Society," which outlines the history and importance of astronomy (pp. 54[3]–577); a letter of 20 August 1779 to Professor Mayer of Mannheim, Germany (pp. 580–581), an article on the "Problem of Archimedes" sent to the printers of the *Pennsylvania Gazette* on 8 October 1767 (pp. 581–582); and an obituary (pp. 595–596) from "*European Magazine*," and other letters.

Benjamin Smith Barton also comments that Rittenhouse's "own library was small" and on the different attitudes between Rittenhouse and himself toward reading commentaries of others, "our friend was not a laborious student" (p. 604). Here we may disagree in the case of his reading Newton's *Principia*, for it had contributed greatly to his understanding of physics. On the occasion of William Darlington's writing to him regarding the use of the name "Rittenhouse Academy" for what became to Darlington's disappointment "West Chester Academy," Barton wrote to Darlington:

> *In the present unhappy state of our country when good and great men are too frequently kept at a distance from each other, merely by the differences of their political creeds, or opinions, it will reflect honour upon the people of your country, that, laying aside all their prejudices, they return, with generous and grateful feelings, to the memory and services of*

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80 The Penn Co.? or a company formed to finance the project, Wm. Smith and Rev. Barton among them? The APS?

81 James Stokely in *Pennsylvania Mag.* (1932): 236–248

82 *PMPJ* 1 (1805) Pt. 2: 93–100, 159–161.

83 Hugh Blair, *Lectures on Rhetoric and Belles Lettres* (London, 1783), sec. 36. DNB.

him, who with Franklin, first made us known as a people of science, among the nations of the world.

Philosophers are men not merely of today, but of ages yet to come. Their fame often grows with the progress of time. The Rittenhouse Academy, the hill on the plain on which it stood, may be dear in future ages, when the little political distinctions of our times shall be entirely forgotten,—will be dear, to every lover of American literature and science, and never can be mentioned or contemplated without a fond remembrance of one of the most happy unions of genius and science, of modesty and virtue, in the same person.[84]

At the request of William, Benjamin Smith Barton wrote of his uncle:

He was dear to us both [daughter [76]Esther Waters was with Barton at Rittenhouse's death]*; to all his relatives and friends; and to his country. To me, let me add, he was peculiarly dear. The most happy and profitable hours of my life were passed in the society of this virtuous man. I followed his footsteps in the wilderness of our country, where he was the first to carry the telescope, and to mark the motions and positions of the planets. In the bosom of his family, I listened to his lessons, as an humble disciple of Socrates, or Plato. Science mixed with virtue was ever inculcated from his lips.—But to me, Mr. Rittenhouse was more than a friend and preceptor. He was a father and supporter. He laid the foundation of what little prosperity in life I now, or may in future enjoy: and if it shall ever to be my fortune, either by my labours or my zeal, to advance the progress of science, or to reflect an honour upon my country, I should be the most ungrateful of men, if I did not acknowledge, and wish it be known, that it was David Rittenhouse who enabled me to be useful.*[85]

He also recalled that during the 1793 yellow fever epidemic Rittenhouse had sent him a list of worthy poor whom he wished Dr. Barton to treat, but to send the bill for his services to him. On the subject of penal laws he felt "of all murders legal murders are the most horrid." On another subject:

In a conversation which I had with him on the subject of analogies between animals and vegetables, when I had observed to him that the further we push our inquiries into this interesting subject, the more reason we have for supposing that those two series of living beings constitute, as many eminent naturalists have supposed, but one vast family, he said that it appeared to him, but he hoped it would never be discovered that vegetables are endowed with sensibility. 'There is,' he observed, 'already too much of this in the world.' [Rittenhouse's religion] *was sublime and pure. It had no tincture of superstition or credulity. Accustomed from an early period of his life to contemplate the largest and the smallest objects of creation, and with respect to the former to view their arrangement and harmony in the construction of a system of immeasurable extent, in these objects and in these places he beheld the revelations of our Creator.*[86]

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84 West Chester College Library.

85 W. P. C. Barton, *Rittenhouse*, 445.

86 W. P. C. Barton, *Rittenhouse*, 603–608. Cassel, *Rittenhouse*, reproduces part on pp. 207–213.

So much of Benjamin Smith Barton's own attitudes toward religion and the unity of the universe is embodied here.

William Barton

William[87] was the oldest of the children of [7]Thomas and [6]Esther Rittenhouse Barton, born shortly after the return of his parents from England and his father's ordination. Throughout Benjamin's life William remained a loyal and affectionate brother. He attended the local Academy in Lancaster and enjoyed the environs of a beautifully situated and pleasantly progressive community. Studious and cooperative, he learned something of Indian ways and problems when he befriended and tutored the half-Mohawk boy Wilham of Canajoharie, while that youth was under Rev. Thomas Barton's roof in 1767. William was an early Patriot in his country's struggle toward nationhood. He sailed for England in September 1775, landing on 7 January to study law at the Temple. He carried letters of recommendation from Rev. Richard Peters and his uncle, [6]David Rittenhouse, among others, but most importantly he had financial assistance from Thomas Penn. Penn and William's father, tormented by the lawless actions that were taking place in the colonies, and distressed by support of the Patriots by [6]Paul Zantzinger, Rev. Barton's son-in-law, and his influence on William, may have hoped that seeing the land of his ancestors, their governments and people would restore William's loyalty to the Crown. William spent three months of his three years abroad in Holland studying its administration. While in Amsterdam from whence had come his mother's paternal ancestors, he visited Adrian Rittinghuysen, who was eighty-five years old. Homeward bound by way of the West Indies, William took part in the capture of a British privateer, which was taken to Baltimore, and upon landing he took the oath of allegiance to the United States Government.[88]

One of his first acts after arrival was to make a plea to authorities for his father's return from exile in British-held New York with a new opportunity to take the oath of allegiance. Stunned that his son would think he would be moved from his loyalty to church and crown, Rev. Barton in sorrow declined to reconsider. After long delays, William was granted permission for a short visit with his parents. The meeting, held in Elizabethtown, New Jersey, only a month before his father's death, must certainly have been painful for all. While William had been awaiting permission in Lancaster, he had received a letter from David Rittenhouse dated 24 January 1779:

> *I most sincerely congratulate you on your safe arrival, and impatiently expect the pleasure of seeing you here. I received yours from Baltimore ten days after that date, and immediately wrote your father, supposing him to be still in New York, though we cannot be certain of that matter.*[89]

Shortly after his arrival home, William was admitted to the Lancaster bar and became an officer of the militia of the borough of Lancaster, an enthusiastic supporter of the fight for Independence. On 30 August 1781 a note appeared in the *Pennsylvania Packet* that he had been "lately appt'd notary-tebellion public" and had removed his office to the south side of Market, three doors above Laetitia Court. He had now assumed responsibility for his younger brothers and sisters with some help and encouragement from David Rittenhouse. They remained with Polly Thornbury near Caernarvon until [7]Benjamin and [7]David were sent off to school in York under the care of Rev. John Andrews.

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87 M. Rubincam in *Pennsylvania Hist.* 12 (1945), no. 3: 179–193.

88 Cassel, *Rittenhouse*, 16.

89 Cassel, *Rittenhouse*, 17.

On 14 June 1781, [5]William had married Elizabeth Rhea (b. 1759), daughter of Mary Smith Rhea and John Rhea of Portsmouth, New Hampshire, in Second Presbyterian Church, Philadelphia.[90] Their children were [13]William Paul (Crillon) (1786–1856); [14]John Rhea (1796–1871); [15]Thomas W.; [16]Charles, who died in November 1811; [17]Mary Rhea; [18]Hetty Ann; [19]Elizabeth Sophia; [20]Susanna Juliana—named for Lady Juliana Penn, a longtime friend of the family; and [21]Nancy. Charles was mentioned, but not named, in a letter from a friend to Benjamin Latrobe stating that [13]William Paul (Crillon) had returned from Lancaster after attending the funeral of his brother. Mrs. Mary Smith Rhea, William's mother-in-law, was probably living with them, since on 5 March 1814, William wrote to Benjamin, "[5]Mrs. Barton & the Girls, and Mrs. Rhea—unite with me in affect. regards to [17]Sister Mary, Yourself, and our Cousins. I am as ever, Dear Brother, very affectly. Yours."[91]

[18]Hetty Ann left a colorful account of a visit of William, sister [17]Mary Rhea, and herself to the [10]Richard Peters Barton family on the farm near Winchester, giving an account of the family and of numerous friends met along the way. "Poor Mary" suffered several sick headaches enroute, but Hetty appeared able to take all the rough roads and close carriages. The party took the long route home, by way of the Falls of the Potomac, Georgetown, and Washington, where they visited a number of friends: the Madisons, Miss Paine, her sister, Dr. and Mrs. William Thornton, General Henry and Mrs. Dearborn, and sister Mrs. Wingate, Nicholas Bayard, "Young Mrs. Nurse who was a Rittenhouse," and had dinner with Jefferson. After a visit in Philadelphia they returned home to Lancaster.[92]

One son of William and Elizabeth Rhea exceeded in medical reputation both that of [13]William Paul (Crillon) and his uncle [11]Benjamin Smith Barton: that was [14]John Rhea Barton, born in Lancaster, Pennsylvania, in April of 1794. He received his M.D. degree with distinction at the University of Pennsylvania in 1818, probably only a little acquainted with his uncle, and probably not knowing him in the lecture hall. His thesis foreshadowed his lifelong interest in bones—it being on certain injuries to the bones of children. He served an apprenticeship from 1813–1818 and was one of the surgeons in the Almshouse from 1818, until he joined the surgical staff of Pennsylvania Hospital in 1823, specializing in hip and patella surgery. After resigning from the hospital in 1836 he continued as professor of the principles and practice of surgery in the medical school until his retirement in 1840.[93] He was the originator of an operation of osteotomy; see his paper, "On the treatment of anchylosis by the formation of artificial joints," *N. Amer. Med. Surg. J.* 3 (1826): 279–292.[94] The condition known as "Barton's fracture" of the radius was published as "Views and treatment of an important injury to the wrist" in *Medical Examiner* 1 (1838): 365–368.[95] His first wife, Annie Frazer, had two children. After her death he married a wealthy widow, Susan Ridgway, who gave as a memorial to him after his death in 1871 fifty thousand dollars for the establishment of a chair in the principles and practices of surgery in the medical school.

After Thomas Pennant Barton's death in 1869, his wife, Cora Livingston Barton, gave the oil portrait of the young Benjamin Smith Barton, home in 1789 from his European studies, to

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90 *Record of Pennsylvania Marriages prior to 1810* (Baltimore, 1968, 2 vols.), and Edward Carpenter, *Samuel Carpenter and his Descendents* (Philadelphia, 1912), 93.

91 Barton papers, APS.

92 University of Pennsylvania; copy seen at HSP. William Thornton (1759–1828), M.D. Aberdeen University, 1784, after study at Edinburgh 1781–1784, but is known for his design of the Library Company, Philadelphia in 1789; the Capitol in Washington, D.C.; the Octagon House; and some of the buildings of the University of Virginia. In 1802 he was appointed in charge of patents. He "enjoyed the friendship of...Franklin, Rittenhouse, Washington, Jefferson, Volney," John Randall, and the Madisons. (Fiske Kimball in *DAB*). Probably Paine Wingate (1739–1838), judge of the Superior Court 1798–1809. (Wm. A. Robinson in *DAB*). Henry Dearborn (1751–1829), soldier, Secretary of War under Jefferson (Julius W. Pratt in *DAB*).

93 *Alumni*, 10; Henry R. Viets in *DAB*.

94 Morton, *Medical Bibliog.*, no. 4451.

95 Morton, *Medical Bibliog.*, no. 4514.

Dr. John Rhea Barton just two years before his death in 1871. How much had he appreciated it? He had scarcely known his uncle except by reputation.

Sometime before the record of his being present at a meeting in January 1787, William had been elected to the American Philosophical Society. President George Washington in 1789 nominated him, and the senate confirmed his appointment to be one of the judges of the Northwest Territory, but William obviously did not consider it feasible to leave for the outpost in Ohio, and so he declined, although he expressed a desire to become Assistant to the Secretary of the Treasury.[96] Shortly thereafter he was appointed, "President Judge" for the Pennsylvania district of Lancaster, York, and Dauphin Counties.[97] When Alden resigned as Deputy Secretary of the Treasury, Alexander Hamilton being the Secretary, William wrote to Jefferson, then Secretary of State, 7 August 1790:

> *Situated as I am with a pretty numerous family, and having a small as well as precarious income, I concluded to offer myself as a Candidate for that Vacancy... If, Sir, you should be disposed to favor my Views, on the present occasion, I beg leave to announce the names of Mr. Secretary Hamilton and Mr. Tench Coxe, Mr. Speaker and most of the delegated from Pennsylvania, Mr. Page, Mr. Madison and Mr. Boudinot, besides Mr. Rittenhouse...all of whom, I trust, would bear satisfactory testimony to the respectability of my Education, Connections and general Deportment. Were it proper, I might refer to the President, to whom I have been amply recommended.*[98]

One of the factors contributing to William's precarious financial situation was the loan of eight hundred dollars to his younger brother, Benjamin, and of which he reminded him in 1801. William's name had been submitted some time before, since Rittenhouse had put in a word for him on 20 April:

> *...thinking it may probably fall in your way to befriend him, I cannot forebear giving my testimony to his character. He has had a liberal Education and has studied the Law. His abilities are certainly more than equal to the Office, as he has given some Specimens sufficient to convince us that he might be a very agreeable writer. His principles and morals are unexceptionable and his Conduct is in every respect such as must endear him to his friends and acquaintances. Your goodness will excuse the liberty I take...*[99]

William called on Thomas Jefferson with this letter, and Jefferson applied to the Secretary of the Treasury who responded:

> *Mr. Hamilton presents his respectful compliments to Mr. Jefferson and returns him the letter from Mr. Rittenhouse on the subject of Mr. Barton. As Mr. Barton's merit is well ascertained, if Mr. H*[amilton] *can be of service to him in any other way he will take pleasure in being so.*[100]

Ambitious to take part in government, William again applied, this time to become a clerk in the State Department when he heard of the resignation of one of two who had served

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96 Bull. Bur. Rolls Libr. Dept. State 4 (1894), 153.

97 Cassel, *Rittenhouse*, 16–18; W. P. C. Barton, *Rittenhouse*, 330.

98 Washington Papers; endorsed by Jefferson as received 10 Aug. 1790. LC.

99 Endorsed by Jefferson as received 24 April 1790.

100 Boyd, *Jefferson Papers*, 17: 350.

Jefferson. In a letter to Benjamin Smith Barton from New York, 12 August 1790, Jefferson explained that although the two clerks had served as his indexes, being so well informed from long service, the Congress had decreed that the position should not be filled.[101]

Once more in March of 1792 William applied to Jefferson when he heard the rumor that Jefferson's Chief Clerk was about to resign. Rittenhouse had again approached the President on William's behalf, but Jefferson told Rittenhouse, and wrote William on 1 April, that he could not conceive that William would want such "an uninteresting & Unimproving labour," and that consideration should first be given to the senior clerks in succession who, "having been very long in office, are perfectly intimate with all the papers & proceedings, for years back, to all of which I am perfect stranger, & to which consequently they serve me as an index."[102] Tench Coxe received the appointment, but in 1793 William became principal clerk in Coxe's office as Commissioner of Revenue. In 1800 he was appointed Prothonatory of Lancaster County, and from 1803 until 1809 he served as Clerk of Orphans' Court. He was at that time, Paul Zantzinger wrote to Benjamin 23 November 1800, with his family "in good health."

Extremely verbose, William nevertheless was in demand as a political speaker, and was the author of a number of tracts. His *Observations on the Nature and Use of Paper Credit... including Proposals for founding a National Bank* (Philadelphia, 1781), a forty paged booklet, unites him in the literary world with his forbears, his younger brother, Benjamin, and his son, William Paul. It won him a Master of Arts degree from the University of Pennsylvania.[103] For "On the propriety of investing Congress with powers to regulate the trade of the United States," in *American Museum* 1 (1785), Princeton awarded him an M.A. His "Observations on the Probabilities of the Duration of human life, and the Progress of Population in the United States of America," read in 1789 before the American Philosophical Society, then published in its *Transactions*,[104] was reissued by the Massachusetts Historical Society in 1791. It inspired Benjamin to write an unpublished paper on the benefits of tea. William had written that the people of Schenectady live long, but do not seem to enjoy better health: "My brother William Esq. who has devoted much more attention to the subject than I have, and whose memoir should be read by every American, and by every philosopher. I am labouring to emulate him in impartiality." Benjamin wondered whether the Dutch settlers in New York State, drinking black tea and eating less meat, and the climate of that part of the country, had anything to do with their long life.[105] William contributed a note on the medical uses of St. John's Wort, part of which Benjamin published, adding his own comments in *Philadelphia Medical and Physical Journal*.[106]

Probably the first important work by an American, published in America, on international law was William's *Dissertation on the Freedom of Navigation and Maritime Commerce, and such Rights of State, relative thereto, as are founded in the Law of Nations...* (Philadelphia, 1802), an octavo of 339 plus xlv pages, and a portrait. William dedicated it to Jefferson and a specially bound copy was inscribed for J. D. Sergeant, lawyer-husband of his cousin Elizabeth Rittenhouse. He also donated a copy to the American Philosophical Society in November. The following year his *Observations on the Trial by Jury...by an American* (Strasburg, 1803), which spoke for abolition of the jury, was dedicated to his brother, Richard Peters Barton, and a copy presented to the Society.

William is best remembered for his *Memoirs of the Life of David Rittenhouse* (Philadelphia, 1813), with 614 pages and a portrait, some of the facts recalled for him by Benjamin (W. P. C. Barton, *Barton*). The work is "interspersed with various notices of many

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101 Ford, *Jefferson*, 5: 222-224.

102 Ford, *Jefferson*, 5: 491.

103 Matriculates, 519.

104 *Trans. Amer. Philos. Soc.* 3 (1791): 25-55, 134, 138, with four charts.

105 Barton papers, APS: a 2-page essay "Complexion Teas." [Black and green teas, *Camellia sinensis* L. TROPICOS.]

106 *PMPJ* 1 (1805) Pt. 2: 54-59. [St. John's Wort, typically *Hypericum perforatum* L. IPNI]

distinguished men." He details the influence of the friendship and guidance on Rittenhouse of his father, Rev. Thomas Barton, and of Rev. Richard Peters and Rev. William Smith. On the title page he lists his own memberships: the American Philosophical Society, to which he had been elected in 1787, the Massachusetts Historical Society, and the Royal Economical Society of Valencia, Spain.

Benjamin had contributed in the early stages, and William wrote, 3 July 1813:

> *You have obliged me much, by sending me Mr. Jefferson's letter (of a remote date) to our deceased Uncle: It is an interesting one, and certainly contains as high a compliment to Rittenhouse as could be well offered to his character, though I think his talents fully merited all the writer has said. I have copied the letter carefully, and now return you the original with thanks.*[107]

Then, on 31 July William made other requests:

> *My 'Memoirs' are now completed, in every particular but one, but the deficiency I experience, with relation to that particular, leaves, as yet, a chasm in the work. This you only can supply: it is that part of the book which ought to contain some account of Mr. Rittenhouse's last Illness, and Death. This would no doubt make an interesting article in the work, and I am therefore extremely desirous of obtaining such facts for it, as would be proper to introduce—Can you not, then, My Dear Brother, find time enough to send me these?—even in, as rough a form as you please, should you not have leisure to finish them? The manner in which I mean to notice the circumstances attending his Sickness and Death, will not interfere with any thing you may think proper to say, in whatever you may choose to favour me with besides, of your own—A Short Statement of the occurances in the last scene of his life, will answer my present purpose: anything further might probably be inserted, with propriety, in the Appendices—which will comprize several valuable papers.—As I have made up my mind to put the work to press in a very few weeks (having already almost 500 copies subscribed for), you will do me a great kindness in transmitting to me the information I stand in need of, as soon as possible.— P.S. There is one other matter, which I have forgotten. You were out with Mr. Rittenhouse, while he was engaged in determining the Western Boundary of Pennsylvania—This I have mentioned, of course; but I am at a loss to notice it in such a way, as to show in what capacity, and how, you were with the commissioners, on that occasion, as you were at that time a very young man. I am wholly at a loss for the necessary information on this head.*[108]

Benjamin evidently had not consulted his brother when he accepted Rittenhouse's invitation to accompany the surveying party westward, nor had he suggested the experience he might gain in the application of the medical knowledge acquired as William Shippen's apprentice.

William presented a copy of *Rittenhouse* to Benjamin, to the American Philosophical Society, and one "To John Sergeant, Esq. from his frd & servt, the author." This copy was advertised in 1982 by M & S Rare Books, Weston, Ohio, for $750. William had sometime

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107 Barton papers, APS. Jefferson's letter has not remained with Barton's papers, nor has a copy of Barton's letter to William.

108 BPL.

been in competition with this lawyer, married to his cousin Elizabeth Rittenhouse, as on one occasion when Jefferson replaced him with Sergeant in a civil suit. Expressing his affectionate reverence for Rittenhouse's character and friendship, and saluting William with friendship and respect, Jefferson in Monticello acknowledged a "paper," perhaps the announcement of, or a few pages of galley, for *Rittenhouse*, on 20 October 1812.[109]

Anxious to protect his work and reap its full benefits, William, on 19 October 1813, wrote to Wm. Roscoe in Liverpool, seeking his help in getting a copyright "as soon as possible" in England for *Rittenhouse*: "a work which I have now in press—It will form an 8 vo. volume of about 500 pages, embellished with an elegantly engraved portrait of Dr. Rittenhouse, and I expect it will be published about the 1st of December." He wished "to have an edition of it printed, as soon as the embarrased state of the intercourse between your country and mine, occasioned by a much lamented war, shall enable me to forward to my friend and agent in London, (Wm. Vaughan Esq. of Mincing Lane,) the printed sheets for the purpose." John Monroe, Secretary of State, was to facilitate the exchange of papers.[110] There is in the British Library Catalogue no record of *Rittenhouse* having been published in England.

Contact with travelers was an important means of keeping up with events, and favors were shown to visitors considered worthy of hospitality. In 1804, William met the famous traveller Alexander von Humboldt on his visit to Lancaster, and was remembered in a letter of appreciation, which Humboldt wrote to Henry Muhlenberg on 27 June.[111] Then there were Mr. and Mrs. Merry of the diplomatic service,[112] who were returning from Lancaster through Philadelphia to Washington, so William informed Benjamin 27 September 1804:

> *Dear Brother, This letter will be presented to you by Augustus Foster, Esq. Secretary of the British Legation to our Government. He has been in Lancaster about six weeks, in company with the Minister (Mr. Merry) and his Lady; and during their residence here, we have enjoyed much of their valuable society. The Minister himself is a man of abilities and great worth. Mrs. Merry is truly a charming woman. She possesses an highly cultivated mind, and a correct taste in the fine arts, blended with polished and agreeable manners—She is, besides, an Enthusiast in Botany and a great admirer of your Botanical work; with a copy of which (I understood her to say) you had been good enough to present her...Mr. and Mrs. Merry...propose setting out, on Thursday next, from hence to Washington, by the Western route...Uniting with all my family in love to sister Mary, yourself and children—I am, dear Brother, Affectly yours W. Barton.*[113] [P.S.] *Mr. Foster will, I believe lodge at Renshaw's Hotel, late Mr. Bingham's House.*[114]

William, and undoubtedly their brother Matthias, himself an artist of some accomplishment, were able to give encouragement to a young artist who eventually made a name for himself in America. William wrote for favors from Lancaster to Barton 7 May 1810:

> *Dear Brother, To you, as a critical admirer of the Fine Arts, I can not forbear introducing the bearer of this Mr. Jacob Eicholtz,*[115] *a native of this*

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109 Lipscomb and Bergh, *Jefferson*, 19: 186.

110 Barton papers, APS.

111 For the account of Humboldt's visit to Philadelphia and Lancaster, see Chapter XIV.

112 Mrs. Anthony Merry is also mentioned in Wallace, *Muhlenbergs*, 313.

113 Barton papers, APS.

114 A recent biography of this important Philadelphian is Robert C. Alberts, *Golden Voyage: the Life and Times of William Bingham, 1752-1804* (Boston, 1969).

115 Groce and Wallace, *Artists*; Jean M. Holt in *DAB*.

town and resident among us. I do, very seriously, consider this young man as almost a Prodigy in Genius—He was bred a Tinplate worker and Coppersmith; which occupation he has not yet wholly abandoned: But nature has destined him to be (as I humbly conceive) a Portrait painter of the first grade. Although almost wholly uninstructed, and without an opportunity of even seeing any good Paintings, this extraordinary Man is, at the present moment, very far from being a mean artist—I shall be greatly mistaken, indeed, if he does not become eminent:—His progress in Improvement (with the aid of a few lessons from Sully—a truly respectable Master) is really wonderful; and, possessing Ambition and Taste, as well as Genius, he can not fail to excel—He is, withal, a man of modesty and good character. I wish you could see a copy of my [15]William's Picture by Sully, just finished by Mr. Eicholtz, for himself. Peale could not (entre Nous) have done it half as well. I am sure it will afford you pleasure to notice this young Lancastrian; and it will gratify me if you will introduce him to the Notice of our Nephew, [23]Barton Zantzinger, & some other gentlemen of Spirit, as well as Taste. I beg that you and [17]Sister Mary (to whom all write in affecte. regards) will accept our thankful acknowledgements, for your very kind attention to [18]Hetty and [17]Mary, while in town—They often speak of it. [Postscript] *After closing my letter I have opened it, at Mr. Eicholtz's request, to mention to you his very low charge—only $10.! I wish I could spare the money to have some work done by him before he raises his price.*[116]

Eicholtz told of his development from tin- and coppersmith to portrait painter, "at length I was fortunate enough to get a few half worn brushes from Mr. [Thomas] Sully, being on the eve of his departure for England [1809]. About this time a Mr. Barton strongly urged me to visit the celebrated Stuart of Boston...who took a lively interest in my success."[117]

Eicholtz had taken with him his portrait of Nicholas Biddle to show Gilbert Stuart. After study with Stuart he was able to devote the rest of his life to portrait and landscape painting. He belonged, in the words of E. P. Richardson, to the first generation of American-trained portrait painters, using a simpler, plainer American style.[118]

Again, on 10 June 1814, William called on his brother to receive Colonel John Gibson[119] (1740–1822), Revolutionary soldier born in Lancaster and facile with several languages including Delaware Indian, an accomplishment that surely made him a welcome visitor.

Their nephew "William Matthias Barton had reported on 12 March 1810 that "Uncle-William" was "quite well," but early in 1814 William was idled for weeks. Ever mindful of Benjamin's desire for information on medical matters, and perhaps wondering why Barton had not heard of, or commented on, his older brother's plight, and had not sent his sympathy instead of a reminder of a note due, he detailed his symptoms and the treatment he had received. In a way characteristic of patients, he gave his own opinions, as they differed from those of his physician. In our age of antibiotics and wonder drugs we are curious as to how many of William's symptoms would have developed naturally and how many symptoms were induced by phlebotomy?

March 5 1814, My Dear Brother, You have no doubt been informed of the affliction I have experienced in my family, since my return from

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116 Barton papers, APS.

117 *Pennsylvania Mag.* 37 (1813): 50.

118 E. P. Richardson, *Painting in America* (New York, 1956), 124, self portrait, fig. 49.

119 T. D. McCormick in *DAB*.

Philada. by Sickness. Not long after my return (perhaps a fortnight afterwards,) I was attacked by pretty stongly-marked symptoms of a Pleurisy, for which I was bled &c. This confined me to the house eleven or twelve days. I went out, however, too soon; for I continued debilited and indisposed, until the 25th. of January, when I was suddenly seized (in the Evening) with a violent fit of shivering—This was succeeded by a raging fever. I had one or two shivering fits afterwards, though not so bad as the first, succeeded also by some fever,—but which seemed to go off with a considerable degree of persperation. In five or six days after this attack I thought myself getting much better,—when I was again seized more violently than before, and with more alarming symptoms. I had very nearly become delirious with the Fever, and felt through the day an extraordinary degree of nauziness—In the midst of all this, I had about three smart paroxysms of gout in my foot; & these were succeeded by a swelling & inflammation of the part, which continued (with some slight degree of pain) about eight or ten days: indeed it has not yet entirely gone off. For some time Dr. Kuhn thought me seriously ill; and I believe he treated my disease (to which I could not get him to give a name,) very judiciously. He once said it was a complication of diseases: but I myself suppose it to have been a violent Catarrhal disease—For I had at first, a hard and almost incessant dry cough, accompanied by a headach and extreme oppression at my chest: But after I began to expectorate, (and the discharges in this way were copious, and occasionally tinged with blood,) I was relieved from both these complaints; though they were followed by a sensation of soreness about my abdomen & loins. The Doctor, throughout the whole of this second attack, (I mean that which came on the 25th of Jany.) treated me according to (what I believe you call) the antiphologistic plan, that is, he almost starved me—I was not permitted to take any thing but barley-water, toast & water, oatmeal-gruel &c. Even mutton-broth, jellies, and custards, were prohibited, until within the last two weaks. I am now, thank God, quite convalescent, & have a good appetite: but I am extremely reduced in flesh; and the Doctor thinks I ought not to walk out till the weather—Excepting three times that I took short rides, in a carriage, I have not been out of my house for about six weeks.—About ten days after my sickness commenced, my dear "Hetty (who had been unceasing, day & night, in her attendance on me.) was seized with symptoms of an acute Pleurisy. She was twice bled (on two succeeding days), and by this means procured a temporary relief: but in a few days after, she became dangerously ill, and continued for some days—Her disease appeared to me to have degenerated into a sort of Typhus Fever.—Like myself, however, she is now convalescent, & I trust in a fair way of perfect recovery.—I have given you these details, as they will be likely to interest you, not only as a relative, but as a Physician.

Just as William had helped support him after the exile of their father, and had lent him money for his Edinburgh education, so Benjamin lent to William when the necessity arose. Benjamin may have been anxious to have the money in hand as he was planning his coming trip to Europe. William concluded his letter:

I should, my dear Brother, have replaced the $150 you were so good as to lend me, agreeably to my promise, had I not been entirely incapacitated from attending to any kind of business, by my long-protracted illness. In a few days I hope to be abroad again, as usual; when I shall be able to collect some of the monies due to me Within ten days from this

> *time I expect to remit to you the whole of the $150.—I beg you to renew the enclosed little Note; and if I get it by Monday's (or, at furthest, Tuesday's) Mail—so that I can, put it into Bank for Wednesday next,—I shall be able to send the $150, I expect, the next day. Please to put your signature under the words, "for the use of the Bearer," in addition to the indorsement...I am, as ever, Dear Brother, Very affectly. Yours. W. Barton.*[120]

By July the problem was settled, and William sent a copy of an Indian Treaty "with my love to sister and to Pennant and Sarah—in which Mrs. B the Girls and Rhea all join, as well as to Youself."

Time mellowed the feelings of resentment William had harbored toward his father for his Loyalist sympathies as he grew to appreciate Reverend Barton's contribution to the society in which he had lived and understood more fully the feelings of reverence toward him of his many parishioners. The burning of St. George's chapel in New York was perhaps a reminder to the family of their mother, Esther Rittenhouse Barton, and their father. William's letter from Lancaster to Benjamin 19 June 1814 reads:

> *Dear Brother, Agreeably to my promise, I send herewith the draught which I have attempted, of an Inscription for a Monument to the Memory of <u>both</u> our deceased Parents, which I hope will some day or other be erected. St. George's Chapel in Beckman Street, New York, was a beautiful building & handsomely situated—As <u>the Church</u>, in that city, is very rich, there can be little doubt that St. George's will be most sumptuously rebuilt on the spot; and in that case, it would be desirable, I presume, to have a neat Table-Monument (as it is commonly called,) or Tablet, set up in the Chancel & attached to the Wall: a Monument of that kind would not be expensive, and if executed in Marble, would be durable.—If you should approve of my Sketch of an intended Inscription for it, Mr. Alden*[121] *might, without any impropriety, in my opinion, be persuaded to take a copy of it, for his Work: I submit the whole matter to you. Permit me, however, to remark that it is very customary to place the family arms of the deceased (if a person of any note,) at the head of the Monument of the Inscription: And if that is to be done in this instance, Mr. Alden should subjoin the following <u>NB</u>. to this Notice of the subject; viz.—The Family-Arms (serving as a heading of the Epitaph) are—Arg. 3 Boars' heads couped, gules.—The Crest—a Boar's Head couped, gules, having a golden Ball in the mouth—The Motto—<u>Fide et Fortitudine</u>.*[122]

An interesting bit of Lancaster lore survives in a painting: William Barton, "Camera obscura view of Centre Square, Lancaster, made at 11:30 a.m., 12 December sometime between 1815 and 1820." William "sat in a small enclosure placed in South Queen street. A tiny hole in the north side of the box permitted the image to be reflected upside down on the inside southern wall of the box. Barton then sketched the image, and rendered a watercolor picture of the scene..." The courthouse in the center of the square replaced an earlier one in 1786 and was razed in 1852.[123]

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120 Barton papers, APS.

121 Unidentified.

122 Barton papers, APS.

123 Lancaster Historical Society, the painting used on the jacket (but not reproduced in the book!) by John Ward Willson Loose, *The Heritage of Lancaster* (Woodland Hills, Calif., 1978).

A William Barton contributed the idea of the obverse of the Great Seal of the United States, which is kept and used by the Secretary of State. It appears on the one-dollar bill: the pyramid and the Eternal Eye of God, symbol of the Freemasons. It was adopted in 1782.[124]

Sometime after Benjamin's death William moved to Philadelphia, where he regularly attended meetings of the American Philosophical Society. His miniature was painted by Saint-Memin,[125] and was loaned for exhibit by Elizabeth Sergeant Abbot for the Rittenhouse Exhibit.[126] A photo of a portrait of Mrs. William Barton and Child (probably W. P. C. Barton) was also exhibited.

William P. C. Barton

[5]William Paul (Figure 10) was the given name of the eldest son of [5]William and Elizabeth Rhea Barton. He was to carry on his Uncle Benjamin's interests in botany and medicine; to write a perceptive biographical account of his uncle, one to be read carefully between the lines; and to leave his imprint on the improvement of naval (and army) medicine and hospitals. Born in 1786, he spent his early years in Lancaster. At fifteen years of age he accompanied Benjamin Latrobe as an assistant on the Susquehanna River Survey. Latrobe reported his satisfaction and hopes for William Paul, and offered suggestions to his father for his future: "He certainly is more inclined to pursue science and art than to enter into any profession of conjecture or of words. Whether medicine may be called in a great measure a profession of conjecture your brother may decide. You can answer for the Lawyer." Latrobe himself would welcome the youth of whom he "could not say too much in favor of his talents, his disposition, and his conduct," into his own profession, that of architect and engineer.[127] Encouraged by Latrobe's fine report, William Paul Barton was sent to the College of New Jersey (Princeton), where he graduated with distinction in 1805. Following a local fad among the students at the time, as a senior he adopted the name of an admired person, Crillon, and unlike most of his classmates he retained his chosen appellation, and was known thereafter as William Paul Crillon Barton.[128]

He then entered the University of Pennsylvania Medical School as a pupil of his Uncle Benjamin. Rush's class role of 1806 lists him with William Baldwin, John A. Brereton, Charles Drayton, Jr., and James Rush.[129] His thesis in 1808 was on the use of nitrous oxide gas. It was dedicated to his uncle[130] and a copy presented to the American Philosophical Society. The work was a standard reference for many years.

W. P. C. Barton served as surgeon in Pennsylvania Hospital for a year after receiving his M.D. and appears to have done so over the years in addition to his duties with the Naval Hospital. In 1809 on the recommendation of Drs. Rush and Physick he entered the navy as a surgeon.[131] From his first ship, the frigate *United States* in port at Crany-Island in Elizabeth River, Virginia, he wrote on 3 August 1809:

> *My dear uncle:*
> *As you will perceive by the date of this letter, we are still in port, where we have been detained two months in consequence of the impossibility of*

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124 J. C. Fitzpatrick in *DAH*, vol. 6: 246.

125 Charles B. J. F. Saint-Mémin or Saint Memin (1770–1852), French artist and engraver, came to the U.S. in 1793, working first in New York then in major cities, including Philadelphia and Lancaster, before returning for a period to France. He returned to New York 1812–1814, (Fillmore Norfleet in *DAB*).

126 *Pennsylvania Mag.* 56 (1832): 44.

127 Carter, *Latrobe*, 3: 139n.

128 Louis des Balbes de Berton de Crillon (ca. 1541–1615) was a distinguished French general who fought for Henry III, and, in the siege of Paris, for Henry IV. William may have been struck by the name Berton.

129 Rush, "Register," f. 69, 71, HSP.

130 See also Appendix II, Roster of Barton's Medical Pupils, for W. P. C. Barton.

131 Pleadwell, "Barton," details his naval career.

> *procuring seamen enough to work the Vessel, for, though we have 400 men aboard, we still want 50 able seamen...*[He is not sure of the ship's destination, and he details ships stores.] *As respects my situation, I am every day, more and more pleased with it, and shall ever feel infinite gratitude to you, who principally procured it for me. As a means of a genteel living for a young man for a few years, it has certainly great advantages, and I assure you, those of a professional nature, are considerable—for I am well convinced I have learned more of the practice of medicine and surgery, than I could have conceived it possible to acquire in so short a time. In truth, I have so much responsibility on me, and having no older and more experienced Physician to consult that I necessarily must read much, and besides this, I have so much leisure, that if I do not improve myself, it will be my own fault... With my best love to "Aunt and also to Barton and "Mr. Zantzinger, and with my assurances that I shall never forget the interest you have taken in my welfare, and the many favors you have conferred on me, I am as ever, Sir, Your affectionate nephew. W. P. C. Barton*[132]

He had given a description of his treatment of a knee injury to a sailor, and wrote in more detail a few days later, the treatment published by Barton in his *Journal*: "An Account of a complicated Fracture of the Trochanter...in a letter from William P. C. Barton, M.D. Resident Physician and Surgeon of the Pennsylvania Hospital, to the Editor."[133] On leave in Washington he visited, whether on his own initiative or at the instigation of father or uncle, the Secretary of the Navy, and indicated that he would like to have a position in the Naval Hospital in Philadelphia. He reported on his visit 6 February 1810:

> *My dear Uncle, I have the pleasure to inform you that when I called upon the Sec. of the Navy, he gave me an opportunity, by asking me whether I had any predeliction for the sea life, to hint my wishes & views, which I have before stated to you.—He at length asked them fully; and gave me a voluntary promise, that I should have the permanent establishment in Phil. whenever it could be arranged. This was more than I expected. He told me you called on him last spring, & he returned your call, but that you missed seeing each other; said his son spoke frequently in high terms of you, and desired me to tell you he would answer your letter. He treated me with great politeness & invited me to his house...I came here to stay only one day, & left all my baggage in Baltimore, but received an order from the Sec. to suspend my journey to Norfolk for a short time, and to remain here to assist in attendance upon Capt. Gordon who was wounded in a duel lately. He is at the house of Mr. Galatin,*[134] *who enquired after you...I know not how long I shall stay here, my orders giving me no information on this point—I have been unable yet to deliver my letter to Dr. Thornton,*[135] *but shall do so today...I dined Sunday with Dr. Seybert,*[136] *who desires his*

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132 Barton papers, APS.

133 *PMPJ* 3 (1809): 236-242.

134 Abraham Alfonse Albert Gallatin (1761-1849), came from Geneva in 1790. At the time W. P. C. Barton met him he was Secretary of the Treasury. He returned to Europe in the diplomatic service in 1813 (David S. Muzzey in *DAB*).

135 William Thornton (1759-1828), architect, inventor, public official.

136 Adam Seybert (1773-1825), pupil of Wistar, M.D., 1793, studied medicine and mineralogy in London, Paris and Göttingen. He was an unsuccessful candidate for the Chair of Chemistry when Woodson was elected, although he ranked with Woodson and other leading chemists of the day. He was elected a member of the APS in 1797 and of the Academy of Natural Sciences. He served in Congress 1809 until 1819, contributing *Statistical*

respects to you...Please to thank [87]Aunt & Miss Kean, for their socks which kept my feet very comfortable during my ride; with my remembrance to them, I bid you adieu... Your affectionate nephew William P. C. Barton[137]

As William had contributed to Benjamin's education, so now the doctor was called on to aid, not only this nephew, but others also. Not all records of transactions survive, but among Barton's miscellaneous notes is: "January 16, 1810, I this day lent to my nephew W. P. C. Barton, the sum of twenty dollars which he is to return to me." In this time of confused currency this was, as Barton recorded it, £7.10.0.

On 7 May William Paul wrote that he planned to take his furlough for study in England and France, for lectures and hospital visits. He kept Commodore Decatur's[138] interests in mind. While the U.S. frigate *United States* was docked in Hampton Roads, Virginia, William Paul wrote his uncle on 27 June 1810:

We arrived yesterday morning after a pleasant voyage of three days from the Capes of Delaware. Commander Decatur has received orders to take command of the southern squadron, and we sail to the southward. [His three paged letter then details mostly his practice and treatments, but the last paragraph reads] *...I enclose you 55 dollars, for which my dear uncle accept my thanks—I would sooner have returned it, but could not conveniently. Will you be good enough to answer this letter by the return of this or the next mail, just to let me know it has reached you safely with its contents. I say thus soon because it is quite uncertain how long we shall remain here. With my best love to [87]aunt and [27]Mr. Z—family, I bid you adieu. [35]Paul Z*[139] *is well and I wrote to his family in L*[ancaster] *today.—Your affectionate nephew... William P. C. Barton*[140]

This trip had taken him to Pensacola, Florida, and the naval hospital there. His next assignment was on the brig *Essex* with a trip to Europe where he made a study of naval hospitals. In England he learned of the efficacy of limejuice in preventing scurvy. On 8 April 1811 the elder William wrote to Barton asking $450.00. He had had a letter from his son, who had made a twenty-one day passage from Hampton Roads to "Port L'Orient," then left France on the 28th of December arriving in England "after a very tempestuous passage of fourteen days." Young William, he thinks, should try on his return to get a position at the Naval Hospital in Philadelphia.

S[arah?] Higginson, who became the wife of [7]Thomas Barton, wrote from Boston, her letter undated:

I find by the papers that our nephew William, Dr. William Barton, is arrived, and will probably soon be at Phil.—I should have been pleased to have seen him in London, where he has doubtless seen some of my friends.[141]

Barton left himself a memo, to whom in England he does not record, nor did he date it:

Annals...of the United States of America 1789-1818 (Philadelphia, 1818), then returned to Europe. He died in Paris. Courtney R. Hall in *DAB*.

137 Barton papers, APS.

138 Stephen Decatur (1779-1820), colorful naval officer from a seafaring family; famous for his daring, especially for his capture of pirate ships off Tripoli. Decatur and W. P. C. Barton maintained a lifelong friendship. Allan Westcott in *DAB*.

139 (John) Paul Zantzinger, then 17 years of age, became a captain in the U.S. navy (Cassel, *Rittenhouse*), 27.

140 Barton papers, APS.

141 Barton papers, APS.

> *Dear Sir, thank you for the attentions you have paid to my nephew...His going to London was quite unexpected.* [142]

W. P. C. Barton now remained only nominally with the *Essex*, spending most of his time ashore. On 12 April 1812 in response to his desire, he was assigned to the Navy Yard in Philadelphia. On 16 October 1813, he was elected a member of the American Philosophical Society. After a visit to Philadelphia, his father wrote to Barton from Lancaster 19 June 1814:

> *I was rejoiced, when last in town, in observing your attention to my dear William, in his new pursuit—He seems to be devoted to Botany; and, I hope, under your patronage, his zeal in acquiring that branch of knowledge will prove both honourable & useful to him—and may also, perhaps, enable him to be useful to you. He has informed me of your kind intentions towards him: He feels grateful for them, as I do likewise. William has talents sufficient to make him respectable, and you can enable him to become so, by affording him some countenance and assistance, until he can make his way into practice enough to support him.*[143]

Altogether W. P. C. Barton served as ship's surgeon conscientiously on the frigate *United States*, and on the *Essex* and *Brandywine*, and in marine hospitals in Norfolk and Pensacola. He had early been "overwhelmed with the difficulties" he had encountered, "where every species of inconvenience and disadvantage of ship-practice existed." He found his "feelings were every moment in the day subjected to harrassment and pain, from contemplating afflictions [he] was unable to relieve, for the mere want of comforts so easily procured on shore." With Commodore Decatur's cooperation he did not go into active sea duty in 1813 because of ill health and a desire to complete a text, the first edition of which appeared in 1814. Some of his officers saw this as favoritism. He was appointed instead to the staff of the Naval Hospital in Philadelphia, a duty shared with a private practice and the writing of his book, the title amended in the second edition to *A Treatise containing a Plan for the Internal Organization and Government of Marine Hospitals in the United States, together with Observations on Military and Flying Hospitals and a Scheme for Amending and Systematizing the Medical Department of the Navy*, ed. 2 (Philadelphia, 1817), "remarkably advanced in its thought for the time." Interestingly, it was used more by the army than by the navy.

In 1818 he was called before a court martial for conduct unbecoming an officer. The charges: he had criticized marine hospitals because of their unsanitary conditions and had intrigued with influential friends and relatives for preferment. William Barton, for example, had applied to James Monroe on his son's behalf suggesting a captain's commission. Monroe appeared for the defense, and William Paul was acquitted, though with a caution.

His marriage in 1814 to his second cousin, [7]Esther Rittenhouse Sergeant (1789–1870), seven years his junior, brought him even more closely into the fold of the Rittenhouse-Barton associations. They had fourteen children. A reading of their names is illustrative of the high infant mortality so common in those days, and of their desire to have a son to carry on the name: Elizabeth, Emma, Julia, Adeline, Harriet, William, Emma, William, Mary, Lavinia, Clara, William, and Charles Crillon, of whom more is mentioned later. Esther lived fourteen years beyond her husband.[144]

W. P. C. Barton was elected to the Professorship of Botany in the Medical School on the death of his uncle, teaching there until 1825, when he joined the faculty of the new Jefferson

142 Barton papers, APS.
143 Barton papers, APS.
144 Cassel, *Rittenhouse*, 22.

Medical College, having been a supporter of its founding. He also lectured at the Therapeutic Institute.[145] His botanical works are considered elsewhere.

W. P. C. Barton spent much of 1830 aboard the *Brandywine*. In 1836 he declined the offer to become Fleet Surgeon of the Pacific, but in 1842 he answered the call to Washington to organize the Bureau of Naval Medicine and Surgery, becoming its first chief. He resigned, however, in 1844 because of discord and jealousies stemming from the past and his unpopularity for attempting to remedy (as Drs. John Morgan and Benjamin Rush had attempted during the War for Independence in the Army) the uncleanliness and intemperance in navy hospitals. His rigid economies also won him enmity among some of the officers, yet he was able to set higher standards. In 1848 he spent a few months in Pensacola. He remained on the Board of Examiners, becoming its president in 1852, and was on the Navy's inactive list. Besides other works on the navy, he had in preparation, according to the *National Gazette* of 15 April 1829, a history of the United States Navy, but it was never completed. When he died in 1856, he was honored with a military funeral.

In 1871 Dr. S. D. Gross, prominent surgeon of the Pennsylvania Hospital, wrote of him:

> *He was in all respects a remarkable man; highly educated, learned in his profession, a graceful lecturer, an able writer, and one of the most accomplished botanists in America. He abounded in flashes of wit, a vein of irony and sarcasm...played with consummate ability upon the flute and violin. Many of his acts were marked by the eccentricities of genius. His style of lecturing was conversational, plain, simple, and didactic, without any attempt at oratory; and his success as a teacher was all that could have been desired. In his appearance he was a model of neatness and elegance.*[146]

Charles Crillon Barton (d. 1851), the only son of W. P. C. Barton who survived childhood, followed in his father's footsteps and joined the Navy. Little is known of his career except that in March 1836 he engaged in a duel with another midshipman, the reason unclear, while in the eastern Mediterranean serving under Commodore Jesse Duncan Elliott.[147] He was badly wounded and so remained in Smyrna for over a year under arrest while under treatment and awaiting transportation home. His father appealed to the Secretary of the Navy requesting his release because of the unusual circumstances of the duel.[148]

Commodore Elliott had been controversial from early in his career, especially since criticism of his actions with Commodore O. H. Perry in the War of 1812. Supported by other subalterns disgruntled with Elliott's command, Charles composed for publication *Manifest of the Charges preferred to the Navy Department and subsequently to Congress, against Jesse Duncan Elliott, Esq., a Captain in the Navy of the United States, for unlawful Conduct while Commodore of the late Mediterranean squadron; and a Recrimination raised by that Officer* [Philadelphia], 1839.[149] Elliott was found guilty and suspended from the Navy for a period, but then was given command of the Philadelphia navy yard in 1844. He died the following year.

Esther Barton Zantzinger

Esther Barton (Figure 9), born in 1756 in Lancaster, Pennsylvania, was the second child, the oldest daughter of 'Rev. Thomas and Esther Rittenhouse Barton.[150] On 3 March 1774 she

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145 The position listed on the title page of his edition of *Elements* (1836).

146 Cassel, *Rittenhouse*, 23.

147 Charles O. Paullin in *DAB*.

148 Pleadwell, *Barton*, 268.

149 Sabin, *Dictionary*, 3828.

150 Cassel, *Rittenhouse*, 18, with her portrait.

married "an honorable and high minded gentleman, John Paul Zantzinger, who became a successful merchant, a prominent churchman, a promoter of numerous enterprises, a civic leader reelected chief burgess many times," and a Patriot and soldier in the Revolutionary War. Thomas Barton's second wife, Sarah De Normandie wrote of her meeting the Zantzingers on her arrival in Lancaster in January of 1776:

> *I cannot omit mentioning the genteel and affectionate reception I met with from Mr. and Mrs. Zantzinger both at the time and on every occasion since, and if I can judge by appearances they are not only satisfied but happy in the choice Mr. Barton has made,...Mr. Zantzinger is really an extream genteel polite man and something very engaging in him, I think strikingly so...*[151]

While stationed in Elizabeth, New Jersey, during the War, Paul applied unsuccessfully to join [5]William Barton with liberty to pass into British-held New York to visit his father-in-law. Early in 1801 Benjamin Smith Barton wrote on Paul's behalf for an unnamed government position. Jefferson replied 14 February that had he the power, "nothing would be more desirable to me than the recommendations of those in whom I have confidence, or persons fit for office; for if the good withhold their testimony, we shall be at the mercy of the bad." He regretted that since establishment of the Federalists, Republicans had been excluded from office. He concluded the letter with "Be pleased to present my friendly respects to [87]Mrs. Barton, [78]Miss Sarjeant & [76]Mrs. Waters, and to accept yourself my affectionate salutations."[152] Paul died 23 June 1817, aged seventy-three years, and is buried in Trinity Lutheran Churchyard, Lancaster.

In a letter to Zantzinger, Benjamin wrote:

> *In one of your letters, you say [6]Sister requests to keep the copy of Armstrong, on health, which I left at your house. I fear I never answered that letter. I beg sister to accept of the little book. It should be hers, if it were a hundred times more valuable. Tell her, my vanity leads me to suppose, that she will not be displeased to be told the circumstance—tell her, that somewhat of my prosperity, and success in life, is owing to the reading of this charming poem. Armstrong advises us to 'read aloud.' Early in life, I read the poem, and followed the poet's advice. I have even continued it almost ever since. It has, I think, contributed something towards the invigoration of my chest, naturally feeble, as you well know; but I have gained still more by Armstrong's advice, I learned to read distinctly, and by degrees formed my voice for lecturing, or reading, to large audiences. By the way, this last winter, I lectured to a class of 158 gentlemen.*

The book Esther had so treasured was by John Armstrong (1709–1779), *The Art of preserving Health, a Poem* (Philadelphia, 1786), a copy of which is at the American Philosophical Society.

Paul and Esther had sixteen children, some of them dying young.[153] [22]Esther Maria, born in August 1774 in Lancaster, lived but a year. [23]Thomas Barton Zantzinger, born probably in Lancaster 5 January 1776, entered University of Pennsylvania in 1790, earned his M.A. in

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151 Anonymous, "Barton 1776," 213.

152 Lipscomb and Bergh, *Jefferson*, X: 199–200.

153 Cassel, *Rittenhouse*, 24–27.

1802[154] and practiced law in Philadelphia, where he died in August 1875. He married a Miss Sheaf. In an undated letter to his uncle, B. S. Barton, he wrote that he was sorry to trouble him, but he needed a small sum. Again 14 February 1812 "My note with your endorsement for $800 becomes due to Pennsylvania Bank tomorrow, will thank you to endorse the enclosed for its renewal." On 16 March a letter reads "I have been engaged with Mr. McKean until within a few minutes...Tomorrow I expect to see you upon my business," which was unspecified.

[24]Mary, born March 1777 in Lancaster, died June 1821. She had married Rev. Thomas Picton.

[25]Sarah Barton Zantzinger, born in Lancaster in 1778, was baptized by her grandfather, Rev. Thomas Barton. She married General Franklin Davenport of Woodbury, New Jersey, one of its most distinguished citizens, a lawyer and senator. Sarah may have met Davenport while on a visit to her Aunt Juliana Susanna White in Woodbury. Davenport's association with General Livingston suggests that Benjamin Smith Barton and family may have become acquainted with Livingston through Davenport, thus influencing Thomas Pennant Barton's becoming secretary to Livingston in Paris. Davenport is mentioned in a letter of 26 March 1807 from Paul Zantzinger to Barton.

[26]Esther Sophia, born in Lancaster in May 1779, died young.

[27]Juliana Elizabeth, born in Lancaster 26 August 1781, died in 1854. She married Col. Robert G. Johnson of Salem, New Jersey, in 1813, but they had no children.

[28]Harriet Ann, born in Lancaster in January 1783, lived only until July. She had been baptized by the Rev. Henry Muhlenberg.

[29]Harriet Rennette came along in August of 1784, and was also baptized by Rev. Muhlenberg. She visited with the Bartons in Philadelphia, and with her Aunt Juliana Susanna White in Bridgeton, New Jersey, in 1800.

[30]William Paul, born in Lancaster in 1796, wrote to his Uncle Benjamin on 29 March 1808, thanking him for an introduction to Dr. Cosmo Stevenson;[155] asks him for a couple of letters to friends in Washington, and giving his impression of affairs: "the total stagnation of commerce and a great probability of its remaining so." He would have a reply directed to Evan's Hotel in Washington. He may have been in the army.

[31]Caroline Amelia was born in 1787; [32]Henry Richard in August 1789, baptized by Rev. Henry Muhlenberg, as was [33]Henry David, born 1791. Henry David was apprenticed to a printer, William Hamilton in Lancaster. It appears Uncle Benjamin planned to help him become established in his own shop, should he prove accomplished, but unfortunately we know no more.

Hamilton wrote from Lancaster to Barton in Philadelphia 23 October 1813:

> *Sir, you will, no doubt, recollect a conversation we had together about 12 months ago on the subject of your nephew Henry D. Zantzinger—You evinced a disposition to serve him, provided he should prove worthy of your patronage—For the benefit of the young man, I made no hesitation in telling him part of our conversation, & perhaps a little more—namely that if he should conduct himself with strict propriety & show a disposition to do well, you would assist him—On the contrary, should his conduct be loose or immoral, he could not expect your friendship—and that I presumed you would be governed by my report to you when his term of apprenticeship expired...His apprenticeship expired some weeks ago & he has worked with me since as a journey-man; & I must in justice to him, say, that in both situations, he has done well—He wants a little advice occasionally—but his disposition is good—and he will, I think, at all times be governed by the*

154 *Matriculates*, 37.

155 Cosmo Gordon Stevenson, a former student of Barton.

> *advice of those whom he esteems as his friends—He is now a good workman—able to execute any part of the printing business; and as such I recommend him to you, with pleasure—feeling a hope, and indeed a confidence, that he will use to advantage, & be grateful for, any friendship you may please to extend to him.—I am Sir* [etc.] [156]

[34]Richard Augustus was born October 1792 in Lancaster and was also baptized by Rev. Henry Muhlenberg. His Uncle Benjamin was one whom he consulted before entering the army in the War of 1812, defending Fort Erie, from where he wrote his uncle stating the activity was too great for his collecting *naturalia* for him. He was made Brevet Captain 15 August 1814, married in 1821, and became a Major in 1854.[157]

[35]John Paul, born in 1794 and baptized by Rev. Muhlenberg in Lancaster, entered the navy. He wrote to his Uncle Benjamin for recommendation, when he was seeking a promotion. He was confident that with four years' service he could "support the weight of one epaulet with some credit to my friends and self." His uncle was to write to Mr. Jones[158] but cautioned that, "Mr. Jones and the commander are not on Terms." Indeed William Jones came under criticism, since he was "hopelessly inefficient in positions of great authority." John Paul became a captain in the United States Navy. It was probably John Paul Zantzinger who with either John Rhea Barton or John Graeff Barton, about whom we know nothing, had dinner in England at the home of the artist Washington Allston with Charles Robert Leslie, artist, also as guest. John Paul offered to show Leslie a reproduction he possessed of Leslie's portrait of Blissett and Jefferson.[159]

After [36]Caroline Amelia, born in August 1795, and baptized by Rev. Muhlenberg in Lancaster, died the following month, there was a respite for Esther till [37]Caroline Catherine was born in July 1799, and baptized by Muhlenberg. She married an army man, Harry Gilbert when she was twenty-two.

Paul Zantzinger's letter to Barton is one of concern for the actions of teenaged [29]Harriet Rennette, who appears to have left the home of her Aunt [8]Juliana Susanna White in Bridgeton, whom she was to assist during the absence of Polly Thornbury:

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156 Barton papers, APS.

157 Heitman, *Historical Register and Dictionary of the United States Army...to March 2, 1903* (Washington, D.C., 1903), Vol. 1.

158 William Jones (1760–1831) was Congressman and cabinet officer, born in Philadelphia. After serving several years in the navy and merchant marine, he returned to Philadelphia and entered the shipping business. He was elected to the U.S. Seventh Congress and in 1805 to the American Philosophical Society. On 12 January 1813, he accepted the post of Secretary of the Navy in the cabinet of President Madison, serving until 1814, when he returned to Philadelphia and was elected first president of the United States Bank.

159 Tom Taylor, ed., *Autobiographical Recollections by the late Charles Robert Leslie* (Boston, 1890), 184. Charles Robert Leslie (1794–1859) was born in London, while his American parents were there on business. For a short time he attended classes at the University of Pennsylvania, but in 1808 was apprenticed to booksellers. He spent his spare time sketching portraits with such skill that he was sent to London in 1811. There at the Royal Academy of Art he was associated with Allston, S. F. B. Morse, and Benjamin West. He made only a short visit to the United States and died in London. His father, a watchmaker, was a member and curator of the American Philosophical Society from 1801 until his death in 1803. His sister Eliza Leslie (1787–1858) was an enterprising author; see E. T. James et al., eds., *Notable American Women 1607–1950, a Biographical Dictionary* (Cambridge, Mass., 1971).
Washington Allston (1779–1843) of South Carolina, Harvard graduate, went to London in 1801 and studied under West. After travels he returned to the United States until 1811, then returned to London with Morse and Leslie (Raymond Weaver in *DAB*).
Samuel Finley Breese Morse (1791–1872) was born in Charleston, Massachusetts (George H. Genzmer in *DAB*). Flexner, *American Painting*, passim, illus.

Lancaster, Nov. 25 1800

Dear Sir,

Your favor by [29]Harriet I received with great pleasure. She has certainly improved very much in every respect for which we are under the greatest obligation for the Attention paid her by our worthy Brother & [8]Sister. Their anxiety for Harriet's return again we have consented to. She will return during the course of a few weeks to the City, and from there, will be accompanied with one of her Brothers to [1]Mrs. White's. We shall take the liberty of sending her to your Care until she leaves the City. Harriet certainly has not acted with that prudence she ought to have done in persisting to return, until Polly Thornbrough had arrived, & to leave Sister Juliana alone. It has given us some uneasiness—but there is little consideration from young giddy Girls to be expected.

How does our good [47]Sister Mary do, I hope she enjoys her Health, and our Dear little [50]Sarah—please to give [6]Mrs. Z. and the girls love to her.—I had a long letter a few weeks ago from our [10]Brother Richard—he has at length purchased a remarkable fine Farm of 400 Acres but not all together to his satisfaction...

Your [5]Brother William and Family & those of [9]Matthias & [12]David are all in good Health.—Now I have none but what you do daily hear, there is yet an uncertainty as to who will be our president both parties seem Sanguine, and both too warm & abusive, for which I am extremely sorry,

My love to [80]Sister & [58]Sally & am Dear Sir yours very respectfully

[6]Paul Zantzinger[160]

Thomas W. Barton

[15]Thomas W. Barton,[161] who died unmarried in 1818, was born in Lancaster and from childhood he was no doubt a listener to travel adventures whenever his Uncle Benjamin stopped over for a visit with [5]William and his family as he passed through on his several trips. He soon learned that any natural history observations were welcomed, even requested, from whatever source. He entered the army, having asked advice from his uncle Benjamin and of his cousin [44]Richard Augustus Zantzinger, who was already in the army and who became a Major.[162] As a Second Lieutenant in the 20th Regiment Infantry, he had ambitions to be appointed as Adjutant in the 12th Regiment Infantry, since a vacancy was about to occur. He wrote to his uncle seeking letters of recommendation, reminding him that he had sent a letter on fishes: he was visiting relatives at Winchester on 23 April 1813:

Dear Uncle:

I wrote to you a few weeks ago from the lower country, my letter containing a list of the fish inhabiting the Shenandoah. I also express in that letter a wish to enter the army and was desirous of getting letters of introduction from you to the President or Secrty of War or both to aid me in my appointment. I have since applyed and obtained a commission in a very subordinate station and live in hopes of promotion. The Adjutantry in the 12th Rg Infr will be vacated soon by the appointment of the present Adjutant as Aid De Camp to General Parker. As this appoint (Adjutant) is a mere matter of favor not governed by seniority Genl Parker thinks if my pretensions should be made known to the Executive by my friends and the

160 Barton papers, APS.

161 Cassel, *Rittenhouse*, 24, barely mentioned.

162 Barton papers, APS; Heitman, *Historical Register*, Vol. 1.

office asked for, that I may get it. Will you Sir as one be so good as to write to the Secretary of War making known my wishes in [regard] *of that vacancy to fill the station? I wish for a post affording me an opportunity of distinguishing myself. I am at present 2d Lieut. in the 20 Regt. Infi Thos M. Randolph Conl.*[163] *This gentleman you are I believe acquainted with. Perhaps through him you might aid me in the promotion. The emoluments I care nothing about; the honour of the post with a greater opportunity to serve my country is what I am ambitious of. I have entered the army with a determination of rising or falling, and, if an opportunity present itself I hope I may conduct myself to the satisfaction of my superiors.*

Any thing that you can do for me in this way I must beg leave to say is necessary to be done as speedily as possible as the post may be filled by an earlier applicant. I hope Uncle I am not intruding too much upon your valuable time, but if I can by the influence of my friend be once brought to notice, I will endeavor to dispense with the present necessity of troubling them.

Robert has returned. He has not procured an appointment in the navy. He will Papa will write you soon. We are all well and join in love to you and Aunt and cousins. And believe me D Uncle your Affec nephew, Thos. W. Barton.[164]

Thomas seems not to have gained the position he hoped for. He was evidently a part of General Andrew Jackson's campaign against the Creeks, which opened for settlement large areas of Georgia and Alabama.

In a letter from Benjamin H. Latrobe in Washington to William P. C. Barton dated 10 November 1811, he sent his condolences on the death of "your brother Thomas...his talents for natural history were so remarkable that when a mere child we called him the Botanist. He had the mild and amiable temper and manners, that distinguish you all, and I am sure did not want that courage and independence of mind, which is also a family feature of the Barton's."[165]

It was not [15]Thomas's funeral that William Paul had attended, but that of a [16]Charles Barton. There was the report of the death of a soldier named Barton from another branch of the family, and Thomas wrote to his Uncle Benjamin letting him know he was safe, and reporting on observations from a new territory, from Fort Claiborne, Alabama, 2 April 1814:

Dear Uncle

Your favor of the 17th of Febry. via Winchester came to hand a day or two past with one from my Father.

It struck me when I saw the death of Lieut. Barton that some of my friends might think it myself. I wrote shortly after to some of them acquainting them with my situation to remove all uneasiness on that score. You among some others were neglected, but you were nevertheless not forgotten. I knew that you always expected some information interesting, and as I had none I declined troubling you with an unceremonious letter. Nor can I give you much now, although I have been making enquiries and collections of every thing I thought of the least importance to you.

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163 Thomas Mann Randolph (1768–1828) married Jefferson's daughter, Martha, and they soon moved to Monticello, where they lived harmoniously. In the War of 1812 he became a commander in the Virginia militia, and in 1813 he was made colonel of the 20th United States Infantry, taking part in the Canadian Campaign of that year. Thomas P. Abernathy in *DAB*.

164 Barton papers, APS.

165 Latrobe papers, APS, ined.

There are perhaps in this country (at least I have seen) as few minerals as in any of the same district of country in the United States. A salt Spring on the Tombigbee, not far above at junction with the Alabama is the only water differing from what is common in this country. Mineral substances of any description, are seldom met with. Petrifactions are frequently met with, and particularly on a limestone bluff which runs through this country, in a direction with the Aleghany. Sea shells are found very perfect on it. I think it is a very impure limestone, a part of it resembling more a soft marly substance, and a part much like the French barnstone. Indeed I think it would answer well as a substitute. I have collected a few seeds for you some of which may be new. Numerous plants are now in full vegetation, and had I means of collecting and conveying to you; or did I know the names so as to describe them I could I have no doubt given you much pleasing information on them. The Indians collect a root here with which they dye a beautifull red, not inferior to the turkey red. The Indian name is Push-shi-yea in Choctaw. It is a very fine root, and will not dye until the hair or yarn is dipped into dye made of the laurel. That dyes it yellow, tis then dryed and boiled in the red dye, which is prepared by boiling the root. It cannot be washed out when once dyed. Common in swamps only, but in great abundance there.[166] *The Bird you wish to know of is not common as high up as this. We have here at this time 500 Indians Chocktaw, Chickasaw and Creeks, and I have now in my tent an interpreter from each tribe, and they know nothing of a bird of the name you have given either in English or Indian. But from your description, say, that in the neighbourhood of Pensacola there are many of them.*[167] *Swallows and Martins appear there about the month of Feby. I saw some there myself. The Indian skulls have not been obtained but they might be had. Conveyance is more difficult.*

The Chickasaw tribe of Indians is much reduced by their war with the Creeks. They are the fairest, the tallest, the best made men, and the most cleanly and industrious of the three tribes. The Creeks next. The Choctaws are not large, very lazy, filthy and cowardly people. The latter have the strongest coarsest hair, and the Chickasaws the finest. I cannot read the balance of your inquiries relative to the Indians, but have given you all I know.

This Fort was built lately by G[enera]l Claiborne a brother of the Governr. It is situated on a bluff on the east side of the Alabama 300 miles from New Orleans, 120 from Mobile and 50 from St. Stephens, and about 150 below the forks of the Coosa and Tallapoosa rivers, where the principal body of hostile Indians have their towns. The navigation is good to this spot, and we are building boats to ascend the river to establish a Fort there. The difficulty of getting to a Fort otherwise has made our sufferings in two instances very great. We were reduced to parched corn 5 days, and once to horse flesh for six days without obtaining the object in view.

The manner in which things are managed, with other circumstances have disgusted me with the army, and I shall retire soon.

Remembrances to Aunt and my cousins, and my friends generaly, and believe me dear Uncle Your Affc. Nephew. Thos. W. Barton

[P.S.] *A little animal about the size of mouse lives here underground, by the thousands, and throw up in the course of one night a bank of dirt as large as a half bushel. They are called the Sallamander are seldome seen,*

166 Probably *Lithospermum*, puccoon.

167 Perhaps the Carolina Parokeet about which Barton queried others.

and hard to catch. I am told they are somewhat like a mole, with feet for burying themselves in the ground.[168] *I will endeavor to get one for you.*

The address side of the letter indicated it had been mailed on 9 April from "St. Stephens Mt."

Juliana Susanna Barton White

Juliana Susanna Barton, the second daughter of the 'Rev. Thomas and Esther Rittenhouse Barton, was born in Lancaster and named for a longtime friend, Lady Juliana Penn, wife of Thomas Penn.[169] Juliana Susanna married John Moore White, who studied law, became an attorney in 1791, counsellor in 1799, and acted as a sergeant in the War of 1812. His father, Thomas White, who settled first in Philadelphia, then moved to Bridgeton about 1730, acquired nearly all the land on the east side of Cohansey River. John inherited the land, but in 1808 he moved with his family to Woodbury to practice law.[170] [2]Harriet Rennette Zantzinger visited in Bridgeton in 1800, but Woodbury is mentioned in a letter from Paul Zantzinger to Benjamin in 1809. Juliana Susanna was mentioned in a letter from Richard Peters Barton to Benjamin as "living" [visiting?] with the Bartons. Bridgeton and Woodbury, like Frederick, were favorite places for the Lancaster and Philadelphia families to visit. Polly Thornbury had joined the Whites' household on Juliana Susanna's marriage. The Whites' children were "Esther White, "Hetty" (ca. 1793-1809), and "Elizabeth, of whom we know nothing. "Hetty" was a "precocious girl," a favorite,[171] but she suffered evidently from tuberculosis. Dr. Samuel Bard of Hyde Park, New York, father of the second Mrs. Thomas Barton, in a letter of 21 August 1808 advised his step-grandson, Benjamin:

> *You say nothing in your Letter of my sweet little friend Hetty White—we have unfavourable accounts of her from Polly Thornbury, which have made us all particularly Mrs. Barton very uneasy on her account—should she recover this attack I hope you will insist on her spending the ensuing Winter in a southern climate—not short of Charles Town—to which I think she should go by Water—it is absolute folly in my opinion to attempt to restore weak lungs in the Winter Season in a cold climate. I do not mean to influence or change your opinions by giving yon mine—but only if you concur with me then you may make use of them to enforce your own with her Parents—*[172]

After her death, her uncle Paul Zantzinger wrote from Lancaster 14 February 1809 to Benjamin that "Thomas Barton, son of Richard Peters Barton:

> *...has attended the last remains of our Dear little Niece Hetty White from Winchester* [where she had been visiting] *to Lancaster where she is placed among her relatives. I sincerely hope the mind and feelings of Sister Juliana and Mr. White will now become more composed, and gradually more reconciled knowing the remains of their Dear child is removed to*

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168 Probably a mole. Confused contemporaries of Barton used "salamander" for several unfamiliar animals.

169 W. Barton, *Rittenhouse*, 179, fn. 70.

170 Cassel, *Rittenhouse*, 20, with portr. of White; Lucius Q. Elmer, *The Constitution and Government of...New Jersey* (Newark, N.J., 1872), 337-340.

171 Cassel, *Rittenhouse*, 29, listing only one of the two children.

172 Barton papers, APS.

Lancaster—it was an arduous undertaking of our Brother Richard and his son Thomas who can give you an account of it.[173]

David and Thomas Barton

The second son of 'Rev. Thomas and Esther Rittenhouse Barton was 'David Cradock, born in 1758, who died of smallpox eight years later. '"Tommy,"[174], who followed David, became a continuing concern for his brothers, who tried unsuccessfully to get him established in business. One venture was a book and stationary store in Lancaster. William wrote of "our poor brother Thomas" on 8 October 1804, his sister Esther Zantzinger bearing the letter on a visit to Philadelphia and the Bartons along with pages of a Lancaster *eulogium* on Dr. Priestley, and giving William's opinions of him. William wrote again in answer to a lost letter from Benjamin telling of the financial help for Tommy from 'Matthias, 'Paul Zantzinger, and 'Juliana Susanna's husband, J. M. White:

My dear Brother,

Brother Matt showed me your letter about brother Tommy. I have long been endeavouring to get him settled in some permanent way, knowing, as I do, that something must be done to keep him from starving.

I have been very fortunate. I have engaged old Lockhardt's store for him, this day, at £45 per annum. It is the very best stand in Lancaster; and I am sure he may make Money, if he can have a good assortment. Maxwell (who is really a good fellow) will supply him with many articles—Many now could be got from Dobson, Cruckshank, Conrad, Bradford,[175]*—Maxwell has promised to furnish a little assortment. Try what you can do with the others. The Rush begins this day—The sooner, therefore, everything is sent up; the better. Dickey has promised to make us a remittance next spring. Mr.* [J. M.] *White will, no doubt, contribute something—There is a great prospect of doing something handsome in this branch of business, if a good assortment of Books & stationery be furnished—The stand is a noble one—You can do as you please; but if you will exert yourself you can assist Tommy to do something worth while. Get what you can from Maxwell, Dobson, Cruckshank &c—I enclose 10 Dollars on Account of Mr. Z*[antzinger]*. Pray call immediately on Maxwell, and such Booksellers as you know—and get them to forward on Commission whatever articles they chose to send—everything to make an assortment—Direct them to me.*

Love & that of family to you & yours,
W. Barton
Send the things to Mr. Fulton's (grocer) in Market Street.[176]

It was not business or book-man Thomas, but William who wrote again requesting invoices for books obligingly supplied, and suggesting other likely items of interest to add to the stock:

Lancaster, Dec. 25th 1804

Dear Brother,

To avoid the expense of Postage, I must beg the favor of You to let Mr. Maxwell know that altho' his Books &ca. arrived yesterday, his Invoice has

173 Barton papers, APS.
174 Cassel, *Rittenhouse*, 28.
175 All printers or publishers in Philadelphia.
176 Barton papers, APS.

not yet come to hand,—and to request that he will immediately send it by Post, as Tommy can not mark his goods without it. Desire him also to forward with the first parcel he sends up, a little old book of mine, which I left with him. If he has any of the Church Catechism, I wish he would put up some of them—they will be wanted.—Mr. Cruckshank & Mr. Humphreys have been very attentive—they have both sent him little additional parcels of books, by the stage.—I wish you would forward, for Tommy, Reich's Book, by the same conveyance.—Mr. Vaughan has sent several copies (believe a dozen) of the Rural Socrates,—but no directions about the price—Pray get him to write about them—I wrote to Mr. Cist—about German Books; but know not whether he can supply them: indeed, I am unacquainted with the names of the books wanted but I presume that School and Church Books would Answer best,—including what are called the Bassil Bibles.[177] *Mr. Cist will doubtless Know the kinds, most suitable for our Germans; and if he has them not, himself, would probably speak to his neighbour, Mr. Brautizain* [or Brantigam?] *(with whom I am wholly unacquainted) to send some.—*

This is Christmas Day—That it may be to You and Yours a season of festivity, health and happiness,—is the sincere wish of all my household—and may you enjoy many prosperous returns of it! I am dear Brother, Affectly. Yrs. W. Barton[178]

Hond. by Dr. Cunningham.

In September of 1806 Benjamin begged "David to assist brother Thomas with twenty dollars toward the rent. Barton on 14 January 1807 wrote himself a memorandum: "This day I put into the hands of my brother Thomas, as a present a ten dollar note. Mrs. Barton at the same time put into his hands, another note, of the same value as a present." David, considering it worthwhile to consult Benjamin about their brother, on a visit to Philadelphia bore a letter from William dated 9 January 1809. He wrote of the "afflicted brother," "As to himself, his transit from this scene of wickedness and woe will be for the best." We suspect that alcohol and the influence of companions not approved by the family were Thomas's problems, as well as his knowledge that he had not the intelligence and talents of his more successful brothers.

Thinking to relieve financial pressure on the hard-pressed family, Benjamin offered to bring up Thomas's son, George, but in April 1809, Thomas, writing from Earl Township, Lancaster Co., declined to have his son taken out of the family. He referred to the death of brother Matthias, who was survived by his wife Esther, and he sent love to "Sister Mary." Tommy may now have been a miller in or near Earl Township, Lancaster Co., since Richard Peters Barton on 6 December 1810 refers to his being once more in the milling business in Jefferson County near the Shenandoah about twenty-three miles from the Virginia farm. Failure still stalked Thomas, for on 2 August 1814 David wrote to Benjamin: "I have communicated the contents of your letter so far as it respects our unfortunate bother Thomas, to him, he seems grateful for the favour...I shall deliver him such articles as he may want for the family to the amount you mention. $25.00." The last letter giving news of Thomas was his own of 19 January 1815 from Lancaster, addressed "Dear Brother," telling Benjamin that he was teaching school. He had opened 7 November 1814 with 2 scholars, and now has fourteen. He sent remembrances to sister Mary, Pennant, and Sarah.[179]

Since his letters ceased with Barton's death in 1815, we can only hope that Thomas found his true calling and made a contribution as a successful teacher. Perhaps like William Bartram

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177 Basil? Heavily glazed sheepskin, usually a dull crimson color, nowadays used mostly for ledgers and the like (John Wayneflete Carter, *ABC for Book Collectors*, ed. 4. London, 1967).

178 Barton papers, APS.

179 Barton papers, APS.

he had not been cut out for the business world. There must have been some reason for the brothers William, Benjamin, and David to think he might do well with a bookstore.

Thomas married S [Stephanie or Sarah?] Higginson, "Lancaster Lady," perhaps a relative of Stephen Higginson (1743-1828)[180] of Boston, successful merchant who had been a member of the Continental Congress. Sometime before her marriage she answered a letter from Dr. B. S. Barton, whom she had probably met during one of his visits to Lancaster. He had entrusted her with a letter to Dr. Walter Channing, former pupil, and a fellow naturalist, Dr. Peck:

Boston June 22d [1806] *Mt. Vernon*

Dear Sir,

Your letter reached me by the regular post, and a vessil sailing the next day afforded an immediate opportunity to send the one which you enclosed for Dr. Walter Channing. In return I send to your care a letter for Susan Barton.[181] *I am not certain that she is still at your house, but Mrs. Barton (to whom I beg my regards) will have the goodness to attend to its destination. I well know that all your time is devoted to important vocations. If I can be of any use to you in this place I beg you will demand my service as you would that of a sister—Make me at any time the instrument of your communications.*

Soon after my arrival here, a party was given by Dr. Kirkland, president of the College at H. Here I met your friend Mr. Peck, and gave him your regards, agreeably to your request.—The Botanical Garden consisting of seven acres is beautifully situated, and the plants in <u>fine health</u> under the happy influence of Mr. Peck.

I had a letter a few days since from my friend Mrs. Richard Cleveland, she returns You many thanks for your kind remembrance of her, and desires me to say, as she owed her present health to your care, so she must ever retain a grateful sense of your skill & kind attention to her while in Philada.

I am told the weather in our City has been very intolerable. If it is warmer than in Boston it <u>must be equal</u> to what we hear of the heat <u>in the lower regions</u>—Yesterday afternoon it was by the glass at 90, in the shade in the country where I was visiting.

I find by the papers, that our Nephew William, Dr. Wm. Barton, is arrived, and will probably soon be at Phil.—I should have been pleased to have seen him in London, where he has doubtless seen some of my friends. I hope your Sarah and Mrs. B—are better for the journey. Believe me with every sentiment of esteem Your friend S. Higginson[182]

Thomas and S. Higginson Barton had three children, Esther, George, and Juliana. George Barton, whom Benjamin had offered to take into his home, married a Miss Davis. Juliana was mentioned by Richard Peters Barton with Susanna Juliana, William's daughter, in a letter to Benjamin dated December 1810, after a visit to the Virginia farm near Winchester.[183]

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180 James Truslow Adams in *DAB*.

181 Probably Juliana Susanna Barton White, who spent some time at the home of her brother.

182 Barton papers, APS.

183 Barton papers, APS.

Matthias Barton

The brother closest to Benjamin Smith Barton in natural history interests and with like, or even greater, skill in drawing was [9]Matthias, born in Lancaster in 1762 (d. 1809), the fourth son, and sixth child of the [8]Reverend Thomas and [9]Esther Rittenhouse Barton. He also probably attended academies in both Lancaster and York, receiving the usual classical education of the time. He was admitted to the bar in 1778 in Lancaster, and in 1789 to the Philadelphia bar. Returning to the state capital he served in the legislature in 1793–1795, and from 1796–1804 in the Pennsylvania senate. He was "of superior culture...a gentleman of very amiable manners, of unspotted private virtue, and whose charms in society endeared him to all with whom he came in contact...ranked amongst the ablest men of Pennsylvania."[184]

As a youngster he, Benjamin, and [10]Richard Peters wandered through the woods surrounding home and school and explored the shores of creeks for water-loving plants and animals they might find. Over the years he sent reports or notes of his own collections and drawings for Barton. He had already sent a paper, which was read before the American Philosophical Society 3 October 1788, recorded as:

> *Shells & nuts &c found at the depth of 7 or 8 feet, in the body of a rock, upon the river Susquehanna' opposite Sunbury. Great quantities of petrefactions are daily found in the high rocky hill;—Indian darts, frequently found in the fields near Lancaster;—Water birch bark, specimens; Bear's gut, when first cleaned, resembling a silk ribbon, and applied by the Indians to different uses.*[185]

To satisfy Barton's geographical queries, on 24 October 1804 he "sent a rough drawing of Harper's Ferry[;] also would make a view of Narrows above McAlister's on Susquehannah." He sent shale from the top of North Mountain, Virginia, from brother Richard.[186] Under "Miscellaneous Facts and Observations" Barton published part of a letter of 29 August 1805 from Matthias after reading it before the American Philosophical Society:

> *The Canvas-Back has been killed at Columbia (on Susquehanna)...unquestionably the real Canvas-Back.—These birds have been killed at, and above, Columbia before but were never known to frequent the River so far up, in large numbers, until last winter...freezes must have destroyed the root upon which they feed, in their usual feeding places, and induced them to go higher up the river...Their superior flavour is attributed to their living wholly on one plant,*

...which Barton in his added note called *Valisneria americana*, suggesting it is perhaps the same plant which André Michaux in his *Flora* had called *V. americana*.[187] Barton also commented on European names for the bird, *Anas ferina*, etc. He had not known the duck when he composed his *Fragments* (1799). It was not described until Alexander Wilson published *Anas valisneria* in his *American Ornithology*.[188]

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184 Cassel, *Rittenhouse*, 19–20; as M. Barton in Groce and Wallace, *Artists*.

185 APS "Minutes," 163.

186 Barton papers, APS.

187 *PMPJ* 2 (1806) Pt. 1: 161–162. The bird was also reported by W. D. Peck and by Rafinesque. [The Canvasback Duck is now known as *Aythya valisineria* Wilson, 1814; *Aythya americana* Eyton, 1838, is the Redhead Duck. AOU.]

188 (1814) 8: pl. 70, fig. 5.

In an undated letter from Lancaster in 1806, Matthias wrote his brother, then at "Arch between 7 and 8 Sts" about family matters, but especially announcing that he had obtained subscribers for Barton's projected *Zoology of North America*:

> *I have this Inst. met with Mr. Buin who informs me that he will go to the City tomorrow morn*[in]*g. I wrote to you by Mr. Hamilton*[189] *who left Philada. quite unexpectedly & without calling on you, but he told me that he intended to write you, thank you for your Attention to him & inclose you a Note.—Do let me hear from you soon in answer to my letter* [carried] *by Hamilton. I have obtained 13 good Subscribers to your History of Animals*[190] *& I have no doubt of getting others. Woolett* [191] *has made an excellent likeness of our Father from the old painting. Love to* [87]*Sister,* [50]*Sarah &* [51]*Thomas—Sincerely yours, M. Barton*

Barton sent Matthias an impression in silver of a new medal of Washington, telling him on 12 Oct 1806:

> *I beg your acceptance of it. It is an excellent impression, being one of three that were taken off for me, under the immediate inspiration of the artist, Mr. Reich. I am persuaded that you will set a just value upon this impressive likeness (for such I deem it) of one of the greatest men of the 18th century: one of the fathers of his county; and one of the higher benefactors of mankind. I detest the character of warriors, in general, as a set great for pretty studies of their won glory and power, and wholly indifferent to the happiness of the world; if, indeed, they be not ardently intent upon the attainment of means that terminate in the demolition of the fabric of happiness. But Washington early* [was] *the rare example of a soldier in pursuit of good, a soldier laboring for the peace and happiness of his country; a soldier who religiously sheathed his sword at the very time when any other man in his situation would have brandished it in defiance of laws and of rights, and in contempt of the very liberty which he was so instrumental in pursuing. But excuse me. I did not intend to attempt any thing like an eulogium upon Washington."* [After a request for fish drawings, Barton had this:]
>
> *P.S. I shall procure for you a good impression in copper, of the medal voted to Preble."* [192]

Matthias wrote acknowledging the gift:

> *Dear Brother*
>
> *I wrote a few hasty lines to you last week by Mr. Jos. Clendennin, since which I had the pleasure of your letter of 12th but which did not reach me untill the 21st Inst.*
>
> *I recd. the impression of the new medal by Capt. Singer*[193] *without its having recd. any Injury, it is a beautiful thing and much admired by all who have seen it, accepting best Thanks for it, and be assured that I value it*

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189 Printer in Lancaster.

190 Referring to Barton's *Proposal for Elements of Zoology*.

191 William Woollett was evidently active in Lancaster before working in Philadelphia. Groce and Wallace, *Artists*. The portrait of Rev. Thomas Barton is reproduced opp. p. 215 in Cassel, *Rittenhouse*.

192 Copy, Barton papers, APS, C.D.R. Edward Preble (1761–1807), naval officer and teacher (*DAB*).

193 By courtesy of unidentified visitor.

highly, not only because it is the Work of a first-rate artist, and an impressive likeness of one of the greatest Men of the 18th Century, but because it was presented by you.

I shall not forget either you or your Fish, inclosed I send you a drawing of the Tooth I mentioned when I saw you last. It appears to be much too large for the Tooth of the Horse or Ox, and I have examined several Grinders of the Horse and all of them had from two to three Prongs. The Drawing cost me very little Trouble if it should be of no Value. I told you the Tooth was found near the Connestoga about 1½ miles from Lancaster.

In a Box to the Care of Mr. Tomlinson, to insure its safety I send you Specimens of Iron, Copper & Copper & Iron Ores, an assortment of our Lancaster Pyrites, a very remarkable Squirrel-Skin, the Squirrel was killed a few miles from this place, & some Trifles, together with several handsome pieces of Spar Ore taken from a Cave about 18 or 20 miles on this side of Staunton, Virginia, in a mountain at the Foot of which runs South River. They were taken from the Caves by Mr. Wm. Franciscus of Lamar about 3 or 4 Weeks since; he gave them to me on Condition that I would present them to you in his name. He says the Cave was only discovered last Spring, it appears new & unsullied by the Smoke of Torches &c. He entered it upwards of 200 yards & from his Account of it, it must be very superb indeed.

A few days ago I met Mr. John Moore and asked him if he had ever seen the Reed[194] *in Lancaster County. He informed* [me] *that altho' Mr. H. Muhlenberg had looked for it often they had never found it. I took him some & shewed him 3 fine stalks which I had brought from the Little Connestoga about two miles from Town. They measure from 8 to 9 feet in length. It grows along the West Side of the Creek. I have not yet found a Stalk on the East-side—I send you the legs and Talons of the large Fishing Hawk,*[195] *the Head of which you have a drawing of—and a curious Note taken from Moore's Poems.*[196]

What has become of Pictures and the pickled Fish? I hope they have not met with an accident.

The medal voted to [C.D.R. Edward] *Preble will be very acceptable. Has Voigt said anything to you about my Watch?*

Dr. McCorkle[197] *was in Town about a Week ago & promised me the Eil paper*[198] *within three days, I have not yet recd. it—*

Hetty joins in Love to [86]*Sister,* [50]*Miss Sally &* [51]*Master Thomas.*

Believe me truly Yours

M. Barton

Tell [87]*Uncle Benjamin that I presented his Order, but the University Officers can do nothing with it untill they have ascertained when he resigned his seat on the Bench. M.B.*

[P.S.] *The large Piece of Stone or Coal was found by Mr. J. Musser in the Back-Woods. The flat Indian Stone Mr. Boyer thinks was used for folding & dressing their peltry and skins.*[199]

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194 [Likely the native bamboo or cane, *Arundinaria* Michx. IPNI.]

195 The osprey, not now among Barton's drawings. [*Pandion hatiaetus* L., 1758. AOU.]

196 Can this have been Clement Clarke Moore (1779–1863), Hebrew scholar and poet? Later he wrote "Twas the night before Christmas" (1822).

197 Wm. McCorkle, editor and publisher of *The Freeman's Journal* from 1804–1824 (Butterfield, *Rush*, 1138).

198 Eil paper not identified.

199 Barton papers, APS.

His brother William later remembered that:

> *...it was an excellent Pocket watch made by Le Roy of Paris for the late Matthias Barton Esq. who was induced to let Dr. Rittenhouse have it. After his decease the watch was gratuitously restored to its former proprietor, by Mrs. Rittenhouse's desire, and as a testimonial of what she knew to have been her late husband's regard for his nephew. Mr. M*[atthias] *Barton bequeathed it, by his last will, to his brother and physician, Dr. Benjamin Smith Barton.*[200]

[67]Uncle Benjamin moved to Philadelphia in his later years, and Matthias in the state's capital carried on for the retired judge. Barton received a hasty note from Matthias lamenting his brother's lack of leisure:

> *Lancaster, Jan. 7, 1807*
> *Dear brothe*
>
> *My friend Dr. Henderson is ready to set off. I have only time to write a few hasty lines. Please to have the inclosed 35 dollars delivd. to Uncle Benjamin, & tell him there is a Warrant made out for a Quarter Salary due on Jan. 7, 1806 which has not been paid. I will receive for him when he sends me an Order for it.*
>
> *I sent your letter to Mr Johnson knowing that it could do no harm and might do good—I am sure you would write to me oftener & more fully if you had any leisure time, knowing as you do how much pleasure your letters give me. Hetty joins in Love to Sister and family.*
> *In great Haste Affectly Yours M. Barton*[201]

On September 1, 1791 Matthias married Esther Coxe[202] of Bloomsbury, New Jersey, daughter of Tench Coxe and a distant relative of Dr. John Redman Coxe. On Nov. 30, 1800, Paul Zantzinger reported to Barton in a letter, "Family of Matthias in good health," the family including Esther's mother. There were no children.

It was a particularly harsh blow to Barton to lose a brother to whom he had been so close and who had contributed so much. On 27 December 1808 Barton had written to William "I hope brother Matthias is better," but Matthias died on 11 January 1809 at forty-seven years. He had suffered with "hereditary gout." Barton was at the height of his activities, and had so many hopes and plans for future publications, all of which needed assistance from others. He had dedicated Supplement 2 (1807) of his *Philadelphia Medical and Physical Journal* to Matthias, signing the dedication "Philadelphia March 7, 1806." In his eulogy he referred particularly to Matthias's contributions and his own valuing of them: "Neither these inestimable drawings, nor the manuscript observations to which the editor has alluded, shall be lost. They have been preserved with care," and "as the productions of an untaught artist, who paints for his amusement, the drawings are uncommonly neat and elegant. It is my intention to publish engravings from these drawings."
Barton also wrote:

> *As a man of exact observations he was, perhaps, inferior to few of his countrymen...the mass of original matter which he thus collected, and which he always communicated to the Brother who now endeavours, however feebly or imperfectly, to commemorate his worth, was very*

200 W. P. C. Barton, *Rittenhouse*, 132 fn.
201 Feinstone collection, APS.
202 Cassel, *Rittenhouse*, 18.

> *considerable,* [especially on quadrupeds, birds, and fishes, and will enhance "On the Instincts and Manners of Animals," a work which Barton had close to his heart and hoped to accomplish. Matthias also collected and sent minerals and "fossil objects." Though uninstructed] *he excelled in the arts of Drawing and Painting.* [His drawings, especially of birds and fishes] *are acknowledged, by many competent judges, to be some of the most beautiful in natural history; in point of accuracy, the Editor* [Barton] *is of the opinion that they have never been excelled and seldom equaled.* [He concluded] *To such worth and virtue, feeble indeed is the tribute of respect and affection. But it has one value, that of unaffected sincerity.*[203]

Richard Peters Barton

[10]Richard Peters Barton, born about 1768[204] to the 'Rev. Thomas and Esther Rittenhouse Barton in Lancaster, Pennsylvania, enjoyed the nearby woods and streams with his brothers until he was about 14. He was named for his father's close friend, Rev. Richard Peters, Anglican minister, one of the five trustees of the Philadelphia Academy and one of the organizers of the Library Company and the Pennsylvania Hospital. Richard Peters Barton moved early to the beautiful Shenandoah Valley, where he followed the example of his [65]Uncle David Rittenhouse, who had taken up the hoe when he was fourteen. The Minutes of the American Philosophical Society for 19 October 1787 record that a letter from him was read, Franklin presiding, "On the method of cultivating cotton in Virginia." On 20 January 1792 he was elected with Palisot de Beauvois, among others, to the Society. His letter of 28 May 1804 "On plaister of Paris" was read to the Society by Barton, and his "Natural History of Tennessee" extracted from a letter was read by Barton 16 December 1808.[205]

Brother-in-law [5]Paul Zantzinger gave news to Barton 23 November 1800, in part:

> *Our brother Richard...has at length purchased a remarkable fine farm of 400 acres, but not altogether to his Satisfaction. He purchased from Mr. Werner Washington. It lies 14½ mi. nearer this way from where he now lives, & nearer to Battletown* [in Frederick Co., Virginia]. *Of course nearer to Federal City & Alexandria on the great road leading to Snicker's Ferry & Alexandria. His buildings are but indifferent and small, abt. 250 A. there of Cleared* [land] *& under tolerable fence it is limestone & of excellent quality—he has wrote to me for the best approved Method of Farming, but have not yet had time to answer his letter.*[206]

The farm became a favorite visiting place for relatives. Barton stopped there on several of his field excursions, at least in 1802, 1805, and in 1810. [18]Hetty Ann Barton, travelling with her father William and sister [17]Mary Rhea Barton, described the home of [10]Richard and Martha Barton on her visit in 1803, the first time she had met her cousins, one of whom had been named for her.

> *The situation of the house is very beautiful, it stands on a slope of ground surrounded by trees, in front it has a long piazza; from the end of which is a grand view of several of the high peaks of the ridge, of the most rude and picturesque forms, varying their appearance... We spent a social*

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203 *PMPJ* Suppl. 3 (May 1809): 309–312.

204 According to Rose G. Barton, "Lancaster," he was the youngest son. Cassel, *Rittenhouse,* 27.

205 APS Minutes, 155, 201, 358, 411.

206 Barton papers, APS.

evening (Sunday after a nap and tea) with the family, and every hour showed us something to love and admire in them. A most amiable and affectionate husband well informed and liberal in his sentiments, a mother tender, attentive and sensible, surrounded by promising, good tempered, healthy children...Richard played the flute. Here Mary rode horseback for the first time, and all enjoyed the hospitality of dinners on the farm and with friends in Winchester.[207]

There was scarcely a subject in the field of natural history or agriculture to which Richard did not contribute some notes for his brother professor. As a result of Barton's visit to the new farm 22 July 1802, he sent a list of Indian names of the region, which went into the accumulating vocabulary, plant notes on the region, and a description of the Sulphur Springs of Opequan County, describing the effects of drinking water. His letter of 28 May 1804 Barton published as "On the Use of Plaister of Paris (different varieties of Gypsum, or Sulphate of Lime), as a manure in Virginia," to which Barton added: "The Editor will thankfully receive any additional facts and observations...even *conjectures* concerning the mode of its operation will be acceptable."[208]

Shortly after Barton had engaged the newly arrived German botanist, Frederick Pursh, to be his assistant in the library and herbarium, he planned several plant collecting trips for him. Pursh in 1806 was to travel south though Shenandoah Valley into North Carolina, and Richard was to play host. He was also to care for the plant specimens and see them safely shipped to Philadelphia.

On 18 April 1806 Benjamin alerted Richard to the coming visit of Pursh "if he dont die drunk on the way." He detailed how Richard was to treat his guest, an excellent storyteller after a few sips. He also reminded Richard to let him know of gentlemen coming to Philadelphia; asked about the safe arrival of loaned books, and reported on the state of his health:

...I enclose some tobacco-seed. It is a peculiar kind, from the country of the Six-nations. Take care to plant it separate from other tobacco. Let me know if it comes up. It is, certainly, different from your common kind. It bears a yellow flower, and the leaf is more round. But I hope it will live for you to see it.[209]

Have you received the remaining volumes of Edwards,[210] *and also the work of Clavigero?* [211] *The latter was forwarded by Mr.* [Werner?] *Washington who left this more than a month ago. I did wish to have sent*

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207 Hetty Barton's Diary, University of Pennsylvania; copy HSP.

208 *PMPJ* 1 (1804) Pt. 1: 86–87. Barton added on p. 159 that very considerable quantities of Plaster of Paris had lately been discovered in Virginia at the headwaters of the Staunton River.

209 Indian tobacco, *Nicotiana quadrivalvis* Pursh, *Flora* 1: 181, was described from a specimen collected by Meriwether Lewis. It had been cultivated in the garden of the Arikaree Indians near the Mandan villages on the upper Missouri River. A lost variant of *N. bigelovii* S. Watson, it has been noted as var. *quadrivalvis* (Pursh) East, the capsule being usually 5-parted. Lewis's specimen at ANSP. The plant is discussed in Goodspeed, *Genus Nicotiana L.* (Waltham, Mass., 1954), 451. [The variety may be referred to *Nicotiana quadrivalis* Pursh, Indian tobacco. ITIS.]

210 George Edwards (1694–1773), for whom John and William Bartram collected birds, and William illustrated, was the author of a number of works on birds (Wood, *Lit. Vert. Zool.*). Barton's copy of *Essays upon Natural History* (London, 1770) is at the APS. A scarce work, it consists of essays taken from Edwards's *Gleanings in Natural History* (London, 1758, 1760, 1764, 3 vols.). Evidently some parts escaped from Barton's library.

211 Abbé Francesco Saverio Clavigero (1731–1787), born and bred in Mexico, was a Jesuit who was exiled to Italy in 1767. His *Historica antica del Messico* (Cesena, 1780) was translated into several languages in the eighteenth and nineteenth centuries. Barton once had a copy of Clavigero, *History of Mexico.* Sabin, *Dictionary,* 13518, 13519. There is a copy at the APS. Cullen's translation was also published in Philadelphia in 1817. Had Barton encouraged this? Often cited by B. S. Barton.

many other books. But I am so incessantly engaged, that it often happens that I am unable to do what I am most anxious to do for my friends. You must excuse me. But dont omit to notify me (as we Americans say) of any gentlemen who are to visit Philadelphia from your neighborhood. I have many books for your perusal. I must conclude. Yet you will wish to know something about my health. It is by no means what I wish it to be. The murmur of the head still continues; the hearing of the right ear is greatly impaired; I am still troubled with hot hands and great thirst; and every now and then I am seized with violent symptoms of headache, vomiting, &c. I think I see the end of all these disagreeable affections; Death before I reach the age of forty-five, and sudden death. Yet you see how well I preserve my spirits. In some respects, I yield to no one in happiness.

To my family my attachment is ardent and sincere. My pecuniary condition is not contemptible, and the love of science, which will, (if I dont greatly mistake) be as persistent as the love of my choicest friends, serves to sweeten the most troubled and most painful moments of my life. Excuse my egotism.

With my affectionate respects to my good sister, and all your family, and with kind remembrances to Mr. and Mrs. Stevens; Dr. Lynn, & his lady and last (though not least) to Miss B. Harris, I remain, my dear Brother...[212]

Richard reported on 22 September 1806 some of the difficulties of forwarding Pursh's specimens:

Dear Brother

Since I wrote you last the plants deposited here by Mr. Pursh, have been forwarded to Philada. and I hope have reached yon in safety before this time.

The package was committed to the care of Mr. Southgate, a gentleman of my acquaintance, who called at my house on his way from Norfolk to York Springs [Pennsylvania] *and perhaps to Lancaster. As Mr. S. travelled in a carriage, I asked the favor of him to take charge of your package (directed to the particular care of* [6]*Mr. Zantzinger) and should he not go further than Yorksprings to forward it by a safe conveyance to Lancaster. This he promised to do, and I am persuaded he will be attentive to the business. As he thought it probable he would go as far as Lancaster, I gave him letters to brothers* [5]*William and* [9]*Matthias. I mentioned to the latter the package of plants, and beg he would attend to its being forwarded to you.*

Upon examining a few roots, which Pursh buried in my garden, and covered with Moss, I found them all dead, in consequence of the excessive dry summer, which has always destroyed every trace of verdure in this country.

I should have returned the books and map you were so kind as to lend me, had I not feared that I should encumber Mr. Southgate's carriage too much, and at the same time expected that our Winchester Merchants would soon afford an opportunity of conveying them in safety to you, with the few fossils so long promised...

212 Barton papers, APS.

In the same letter Richard discoursed on a subject of interest to farmers, wheat smut, and this went into Barton's *Journal* as "Agricultural Memorandums and Observations. Communicated to the Editor, by his brother, Mr. Richard P. Barton of Frederick-County, in Virginia."[213] He then included news of a mutual friend:

> *...It is with pain I announce to you the death of Doctor Conrad. He died last night, after a confinement of eight days, under a most violent and obstinate fever, which he contracted at Bath (Berkeley Springs)* [now West Virginia] *where he was a few days on a visit to a patient under a like fever. It is remarkable that immediately after his death the corpse became as black as a negro. Previous to his death it was rather green. His loss will be most sensibly felt by the public generally, as well as by his family and friends.*
>
> *Several other violent cases have lately occurred in this country; and yet I think people generally enjoy good health. The summer has been unusually cool and pleasant altho' excessively dry.*
>
> *P.S. I beg you will forward me (if published) Your Eulogium on Dr. Priestley.*
>
> *Received October 3d. 1806.*[214]

Richard again referred to the loss of Dr. Daniel Conrad, on 6 April 1807; "Docr. Lynn is at present at Cumberland [Tennessee] on a visit to his brothers. His practice is becoming extensive. The death of poor Conrad will enlarge it much." Dr. Conrad had studied medicine at the University of Pennsylvania, at Edinburgh, and had settled in Winchester, "one of the most opulent settlements of Virginia and among one of the most respectable and informed portions of the inhabitants of the state. Perhaps no physician was more uniformly happy in the confidence and the affection of his patients," than the friend with whom Dr. Barton "was well acquainted" and whose death he deplored: whose loss was "a new diminution of the quantity" of his happiness. Conrad was "too intimately acquainted with medicine not to perceive and deplore the still immature and feeble state of this most useful and dignified profession," wrote Barton in his obituary,[215] sentiment that he reiterated in letters and articles. He quoted the circumstances of Conrad's death from his brother's letter.

Sending letters and packages over primitive roads, often muddy from rains, whether by mail or through the courtesy of friends or conveniently travelling strangers, presented continuing problems. Richard wrote 6 April 1807:

> *Dear Brother:*
>
> *In order to relieve your anxiety concerning the box transmitted to Alexandria (to be shipped from thence to Philada.) I return an answer to your last letter as soon as circumstances will permit.*
>
> *I saw Mr. Grayson at the moment of his arrival in Winchester five weeks ago. He told me he had in charge for me a letter from you; but that he had left it in his trunk at Frederick Town, to come on with the stage next day; he himself having rode on horseback from thence. The excessive badness of the roads, however prevented the stage from coming on for many days. In the meantime Mr. Grayson went to* [Fort] *Loudon,* [Pennsylvania], *to his father's, and your letter never reached me till ten days ago. I wrote immediately to Mr. Pasre* [?] *respecting the box, and*

213 *PMPJ* Suppl. 2 (1807): 178–179.

214 Barton papers, APS.

215 *PMPJ* 2 (1806) Pt. 2: 207–209.

yesterday received for answer 'that it had not yet been forwarded but would be shipped in a few days.'

When it reaches you, you will readily perceive why I did not transmit the letters from Cumberland by mail...

Always eager to get out into the field himself, not only to further learn the secrets of the New World and corroborate observations and notes he received from others, but also to bolster his own well-being with a respite from the busy schedule of physician-professor-publisher, Barton was planning a spring trip into North Carolina, and had requested information of special interest along the route. His brother continued:

...In answer to some queries proposed to a friend in low Virginia respecting the peaks of Otter, I lately received a letter on the subject. The information I am confident is correct so far as it goes. The writer is a man of truth, and 'tho no philosopher, visited the peaks.

A road, he says, passes between the two mountains, and there are two plantations in the Valley. The soil is exceedingly rich. The wheat stubble was 18 inches high, and indicated a most luxuriant growth. The Corn stalks notwithstanding were small; but this arose from the want of a sufficiency of sun shine, he conceives. A cane may be thrust into the rich, loose soil two feet deep. The writer ascended the south peak. The distance to the top is five miles as the path leads—The summit is terminated by five pillars of rock at some distance from each other. On the top of one of the pillars is a rock in the shape of a canoe, supported at each end by a cuneal rock—The growth is Chestnut of a large size. Gooseberries, raspberries, and currants grow on the side of the mountain. The writer did not ascend the north peak; nor could he tell whether it was accessible, nor the perpendicular height of either.

As the north peak is, to appearance infinitely easier of ascent than the south peak, there can be little doubt that both are Accessible...Do not disappoint us in your proposed visit to Frederick. All your friends here will be happy to see you.

There was less cheerful news:

...I much regret the loss of Mr. Atherton. He is at present much wanting in New Town [New Market, Rockingham Co., Virginia], *and I had made some arrangements to have him established there. I wish you could find another who would supply his place...I have not yet seen your last journals. The two first Vol. only have reached Docr. Lynn, who is a subscriber. He expresses much regret at this delay...*

We are all well and join in love to you and [illegible] *Sister. I have been much better than usual this winter, and ascribe this to the use of ginger milk. My eyes however complain much. There is no inflamation, but such a debility of the lids that I can scarcely read by candle light. There appears to be a deficiency of moisture. The sensation is just as would be occasioned by sand thrown into them. The lids close involuntarily. A drop of water, tea or other fluid restores them for a few minutes. What would you advise farther? I remain Dr. brother Yrs with Affn. R. P. Barton.*

P.S. Snow April 1. 12 inches deep & hard frosts.[216]

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216 Barton papers, APS.

Tennessee, which had become the sixteenth state in 1796, was now growing rapidly on land recently purchased from the Indians, and Winchester was on the main route down the Shenandoah Valley southward and westward into the new state. Friends who stopped at the nearby farm on their return from a visit to Tennessee pictured a rich land ready for the cultivating, and Richard Peters Barton fell under its spell. He visited the Cumberland area and was inspired with the idea of moving and creating a whole new life. He pictured his sons growing into stalwart and experienced farmers. [8]Robert Rittenhouse Barton at this time was barely five years old. Richard had faithfully collected data for Barton but was having some difficulty in getting the package on the way to him. His report of 27 November 1807 requested Barton to take time to inquire about the availability of what had been reported to be a particularly rich large virgin tract:

Frederick [Co.] *Va. November 27, 1807*
Dear Brother,

I wrote to you several days ago, but my letter (or rather package) was too large to forward by mail, especially as I expect a private conveyance will offer in a few days. Dr. Robertson left Nashville, the same day I did, for Philada. but as his sister accompanied him, he travels slowly, and had not yet got this far. He will call on me and spend a day or two. He treated me with much attention in Nashville.

I must now beg leave to trouble you on a subject highly interesting to me. It will encroach a few hours on your time, but I must beg you will employ the first leisure moment you can spare to do the business.

While in Tennessee, I was informed (by the surveyor general) that a Mr. Norton Prior of your city, had from ten to twenty thousand acres of land on Duck-river in that state, and that there was no doubt he would sell it, or a part of it on reasonable terms. One tract of 5000 acres in particular was pointed out to me as a valuable one. This was located in the name of I. Gray & T. Blount. It lies on, and includes the mouth, of middle and south fork of Duck, and extends north to the mouth of the Wartrace branch.

What I wish you to do is to call on Mr. Prior and know if he wishes to sell his lands, and if so, what is his price. I have not seen any of his lands, but a person who had hunted on the tract above mentioned gave me a good account of it. He will therefore say what price he will take for this 5000 acres. But if he has more to sell he may state the price of it likewise, as several of my friends wish to purchase as well as myself; perhaps 10,000 acres.

If you think proper, or find any occasion for it, you may state to him the prices at which lands are now selling on Duck river. From 7/6 to 12/ is the general price, and many thousand acres were sold on those terms last summer. I wish an answer to this as soon as possible, because several other persons in this state, as well as in the Carolinas, have large tracts, and I intend to apply to them as soon as I hear from Mr. Prior unless I can purchase on good terms of him.

You will see by this that I think seriously of Tennessee. I do so, and if I can dispose of my farm here, I will move to that State in twelve months. I have many weighty considerations for this change. The first is that rich and productive land is cheap, and there is a good market for the produce. [Secondly] *there is reason to believe that these lands will rise in value four-fold in seven or eight years; and thirdly several of Mrs. Barton's brothers and perhaps a sister will join in this plan of a family settlement.*

The climate, about which I had many fears, is I think a very fine one, infinitely more temperate than low Virginia or N. Carolina. The soil is dry, for there are no marshes; and the water is as fine a limestone water as ever

was. The old settlers look as healthy as those of Winchester. I saw many fat and ruddy persons in the country, and not one instance of ague or fever altho' rode 200 miles in the neighborhood of Nashville. The latter however does prevail in the fall, but not more than here—The waters all flow in rocky channels, and have steep and bold banks. For farther particulars respecting the climate I refer you to my letter in answer to your queries.

You may rest assured that I have made no hasty resolutions in regard to my contemplated plan of moving to Tennessee. I have had this matter in contemplation these two years; But was determined to see the country, and make myself acquainted with its local advantages and disadvantages, before I would come to a positive determination on a matter so very important.

After weighing every matter, pro and con, I think that my family will be much benefited by the change. It will be much easier for me to make provision for my numerous family in the rich and growing country of Tennessee, than in this part of the country where lands are too high to purchase to advantage. I even flatter myself that my health will be benefited by the change of climate. Those sudden transitions from heat to cold, and vice versa, which rack my delicate frame, among the mountains here, are not experienced in West Tennessee: or certainly not to so great a degree.

Perhaps it may suit Mr. Prior to make an exchange of property. He may possibly be disposed to part with his Wilderness lands for an improved farm near Winchester. You will know whether it will be worth while to hint this to him. Such an exchange would suit me. If purchase is made of Mr. Prior it is expected that he is both willing and able to guarantee the title to his lands. Pray let me hear from you as soon as possible on this subject, by mail—My long journey has been serviceable to my health—It has greatly improved my appetite. I write this in haste. Patsey joins me in love to you, sister and family—When shall we see you? Adieu, R. P. Barton[217]

Received December 10th, 1807—Answered

Barton's answer does not survive, but we suspect there was little encouragement in it. No doubt he reminded Richard of his age and delicate health, the possible distance from medical help, the sparseness of intellectual association, and the lack of educational opportunities for his growing family. Would not the family miss the proximity of relatives in Lancaster and Philadelphia, and of his wife's family in Dinwiddie County, Virginia, even though some of her brothers might possibly join the migration? He may even have reminded him of Rush's account and description of new settlers in primitive areas, and their harsh existence and degeneration under hardship. It was the successor to a piece of land torn from the wilderness and well cultivated, Rush had stressed, who profited from the initial toils and hardships. The Frederick farm was well on its way to becoming that "beautiful estate in that lovely country" to which Cassel, *Rittenhouse*, 21, refers. Perhaps it was fortuitous that Richard's request that Zantzinger advertise the farm was delayed: the farm did not change hands, and Richard and family remained in Virginia.

Always the opportunist and eager for new data, Barton had sent a list of thirteen queries for Richard's observations on his journey. This embraced a description of the country, its climate, timber and other trees, including the Sugar maple. He wanted to know the symptoms of poisoning by buckeye if cattle consumed it, and of their general condition, and whether they needed extra salt. What were the possibilities of cotton growing? As always "of great interest" to him was any information of Indians, useful dyes, fossil bones, shells, plants.

217 Barton papers, APS.

Richard's original detailed account did not reach its destination, and so on Barton's request he recalled what he could. He concluded his letter of 26 March 1808 with:

> *I have given you a second long letter on the subject of your Tennessee queries; and have no doubt a great deal of what I have said will be quite uninteresting to you. I wish any part of it may be new and agreeable to you. When I am fixed in a log cabin in W. Tennessee, you must pay me a visit there and gratify your own curiosity in respect to that country better than I can do it. In the meantime, let us see you here. If you are as much benefitted by a long ride, and a relaxation from the daily cares of your life, as I am, you ought to take a long trip every year. My two long rides (2000 miles) since the middle of last Septem*[be]*r have been of great service to my health; and if I could afford to ride a few hundred miles once a year, it would add ten years to my life. Such trips are, in a measure, connected with your profession; that is you thereby increase your stack of botanical knowledge, as well as your information in respect to the natural history of the parts you visit.*
>
> *We are all pretty well, and join in love to you and Sister. Some business will probably carry me as far as Lancaster in the course of six or eight weeks. I wish I may be able to extend my trip to Philada. but doubt it.*
>
> *Let me know if this reaches you. I remain Dr brother, with much affection Yrs. R. P. Barton.*
>
> *P.S. Your Journal no longer reaches us here. I am desirous of seeing it. I have only seen two volumes.*
>
> [Addressed] *Doctor Benjamin S. Barton, Philadelphia. Favoured by Mr. Gray.*
>
> [BSB:] *Answered April 24, 1808.*[218]

Richard's report remembered from his trip to Tennessee, added to Barton's own observations gleaned on his journeys to western Pennsylvania and Ohio, into the mountains of Virginia, to Niagara and northern New York, plus his reading of Bartram's *Travels*, and his conversations with his valued friend, all were to be part of the background for Barton's *Geographical View*, a "Specimen" of which was printed in 1809, an updating of a "Sketch" he had delivered before the American Philosophical Society in 1800. As with so many of his projects, Barton was not able to get enough financial support to proceed with the publication, and Richard's letter survives among Barton's manuscripts.

Affection and affability among the Barton families is displayed in their correspondence and references to visits, whether on the Virginia farm, in Lancaster, or in Philadelphia. Of concern to his brothers was Benjamin's health, as was Richard's to Benjamin, for neither were hardy individuals. Richard expressed his concern and sympathy on 6 December 1810, and as so often, he suggested hospitality for friends about to visit Philadelphia:

> *Dear Brother,*
>
> *I have heard, through our Lancaster friends, of your late indisposition. My "Juliana tells me that you have had a most violent, and indeed dangerous attack of gout in your stomach; but we are happy to learn at the same time that you were on the recovery. I hope this will find you perfectly restored, and that you will tell me so yourself very soon. Not a line have I received since you left Virginia.*

218 Barton papers, APS.

I could not permit Mr. Tidball to visit Philada. without a line to you. He is a young gentleman of considerable merit, and respectability, being clerk of Frederick County. His family you are acquainted with. They were particularly attentive to our nieces, [20]Susan & [37]Juliana, and indeed are so to all our Lancaster friends whenever they visit Virginia.

I am very desirous to hear from you more particularly in respect to the state of your health. We wish also to know how [87]Sister [Mary] *is, as well as [50]Sarah and [51]Thomas. My [10,49]girls are flattering themselves with the expectation that Sarah will accompany my [49]Juliana* [visiting in Lancaster] *to Virginia.*

My health has been much better from September to this time than it was last spring or summer. I ascribe this to my return to my old system, which invariably produces a better habit. I mean great temperance with regard to animal food, and a total exemption from wine and ardent spirits. I use occasionally, Chamomile tea (cold) and more frequently the bark of the wild cherry tree. By avoiding much animal food, I escape that horrid lethargic torpor, which is the greatest curse that ever afflicted me; and is generally the precursor of an attack in the head or stomach.

[7]Thomas has at last established himself, once more in the milling business. He has rented a good mill in Jefferson Co. 23 miles from hence and near the Shanandoah.

[10]Patsey and [18]Hetty [visiting from Lancaster] *desire in a particular manner their love to Sister. The former begs she will accept her thanks for the very handsome present received by Hetty. Juliana, as you know is at Lancaster. It is doubtful she will visit Philada. before her return to us; as this will depend upon opportunity, &c. I am Dr. brother with much affection*

Yr R. P. Barton

Hond by Mr. T. Tidball[219]

The present from [87]Mary Barton in Philadelphia to [10]Martha in Virginia would have traveled to her by way of Lancaster and [6]Esther Zantzinger. Mr. Tidball had also been attentive to Hetty Ann Barton and her sister Mary on their visit in 1803.

After one of his visits to the Virginia farm, Barton entered notes from a conversation into his Commonplace Journal:

Both my brother [10]Richard and his wife are persuaded that the negro children walk and talk earlier than the white children. Both of them agreed that the negroes are inferior to us in intellectual endowments. My brother said they have not as correct eyes as the whites have; that is that although they can see as far they do not see as true as the whites; that, for example, they cannot judge as well of a square as the whites–Mrs. B said the negroes are remarkably hospitable to each other but she qualified her observation by observing that it is an hospitality at the expense of their masters.

Mrs. B also said negro children to about age of eight are 'quite as bright or smart in intellect as the Whites of the same age but that afterwards they greatly decline.' The negro at ten is as bright as he ever will be. Mrs. B. told Barton children are very subject to worms. Mrs. B said the Virginia negro is subject to sciatica; principal remedy tar-pills.[220]

219 Barton papers, APS.

220 Barton papers, APS.

[46]Thomas Walker Barton referred to in the following letter was born about 1800 and died in 1863 leaving little record of his later years, though he probably inherited the farm. His [9]Uncle Paul Zantzinger wrote from Lancaster on 14 February 1809 to Barton his appraisal of a youngster such as any adult would welcome hearing of a child: It also carried the sad news of the death of a favorite niece:

My Dear Sir

This will be handed to you by your Nephew—[46]Thomas Barton from Virginia, who has been here among his friends since Fryday last and who attended the last remains of our Dear little Niece [44]Hetty White from Winchester to Lancaster where she is placed among her relations. I sincerely hope the minds & feelings of [8]Sister Juliana and Mr. White will now become more Composed, and gradually more reconciled knowing that the remains of their Dearr Child is removed to Lancaster, it was an arduous undertaking of our [10]Brother Richard & his [46]son Thomas, who can give you an account of it. He is a very fine young Man, & his friends during his short stay among us are much pleased with him—his Manners & all are his Fathers. I never saw a Child so much so.

[6]Your Sister has sent [87]Sister Mary some thread by Thomas with her love to her. That the White will be forwarded as soon as the Women can Whiten it—Your Nephew appears fond of seeing every thing that he can improve by—his expectations are great when he gets among you—I hope that he will be gratified seeing as Many of the Curiositys of the City as his short stay will afford him—The Museum, Circus and other places of curiosity he is anxious to see, a play or Two would also gratify him—his father's letter to me says he was quite a Country lad & sees very little peculiar it may be so but We were all much pleased with him & make no doubt it will be the case with his friends in the City—he will pay our friends a short visit at Woodbury—his time is limited & must be at home abt. the 27th Instant—[6]Your sister & the family all join in Love to Your [86]Sister & the Children & am Yours very sincerely Paul Zantzinger.[221]

[11]Uncle Benjamin, also favorably impressed with young Tommy, requested of [10]Richard that [46]Tommy be permitted to come live in Philadelphia, thinking no doubt, of the companionship he could offer [51]Pennant who was three years younger. [45]William Matthias, visiting or apprenticing in Lancaster, acted as his father's secretary when he wrote 12 March 1810:

Dear Uncle

I snatch these few lines to you to let you know that Pappy has at last concluded to let Brother Tommy go to live with you, Pappy is very thankful to you for the offer, in the second place he is almost ashamed for not sending him sooner, but he has been of so much service this summer, to them at home, running of errands &c. that they could not spare him well—it is more than probabily he will be down next week with [9]Paul Zantzinger,—Pappy will write when Tommy goes down, more to your satisfaction, this is merely to let you know that he is going, I believe I have very little more to say at present, than please to remember me to all enquiring friends, Aunt Mary, Tommy & Sarah—Uncle David's family are all quite well, Uncle

221 Barton papers, APS.

Zanter. & Uncle William also, I remain your affectionate Nephew. Matthias Barton. Please to excuse this hasty scrawl.[222]

Tommy returned home sometime that year, for in the spring Barton had "a most violent, and indeed dangerous attack of gout in [his] stomach," and when Richard wrote him in December he made no mention of Tommy when enquiring about the health of members of the Philadelphia household. This fragment of a youthful letter written to his uncle on Christmas day, though no year is given, but surely after the summer visit, reads: "Dear loving uncle I imbrace this opportunity to rite to you to inform you that I am well at present."[223]

In 1812 Richard was enjoying a "better portion of health than usual." On 9 February 1814 he enquired about "blue-john" or "flour spar," and hoped Barton would have Dr. Cox examine a stone found on Cedar Creek near Middletown [Virginia?]. On February 9, 1815 he wrote that he occasionally suffered "gouty health." He is pleased to hear that Barton is going to visit Europe and taking young [51]Thomas Pennant with him, but he wonders whether March is the season to sail. He has not been successful in getting requested specimens from "B[lue] John." This was his last letter to Barton, or the last preserved. He lived six more years, dying in 1821. He had married Martha Walker, "Patsey," daughter of Captain R. W. Walker of "Kingston," Dinwiddie County, Virginia. Her brother was reported as "getting into a good practice in Virginia," having been Barton's pupil, and referred to by [5]William in a letter to Benjamin 14 April 1789. Richard and Patsey had seven children.

[6]Robert Rittenhouse Barton, the oldest son, born in 1792, spent much of his boyhood on the Virginia farm, then entered medical school as a pupil of his Uncle Benjamin earning his M.D. in 1813 with his thesis on typhus. On 19 January 1812 his father worried in a letter to Barton because he had not heard from him "recently." Another worry was that Robert had written that he could not attend to all the lectures "as [he thought] they should be attended to." He entered the navy as a surgeon, winning two medals in the War of 1812 for distinguished service.[224] Requesting materials in his accustomed way from friends and relatives who might respond, Barton wrote to Robert on 19 February 1814, to which Robert replied with a request of his own, that the bearer of the letter be introduced in Philadelphia, and informed him that little information could be procured by people involved in war. He included a medical note, which he knew would please his uncle. The letter reads:

Erie March 22nd 1814
Dear Uncle,

Lieut. Webster of the Navy, who has just received orders to repair to Philadelphia on the recruiting service, will hand you this. He was on board the Niagara on the memorable 10th Sept. and can give you some interesting particulars of that engagement. As a friend I should like him to be acquainted in Philadelphia, and any attention shown him will be gratefully acknowledged. I most sincerely wish I could accompany him.

Your last of the 19th. Feby. came duly to hand, and I regret that it is not in my power to give a satisfactory answer to any one of your questions. The people in this part of the Country are so absorbed in the War, that it is difficult to get any Assistance from them. I shall be enabled to procure the head of an Indian Dog, on our next visit to Detroit, where I have seen them. I can hear nothing of the disease so destructive to the Pigeons. The Porcupine is sometimes caught on the Penisula, and I shall take the first opportunity of dissecting one.

222 Barton papers, APS.
223 Barton papers, APS.
224 *Alumni*, 10; Cassel, *Rittenhouse*, 29.

I shall always regret I have not been enabled to afford greater satisfaction to your Inquiries, but be assured as far as is in my power I will attend to them with the utmost pleasure, and my gratification shall always be in proportion to my success.

Your kindness I feel sensibly, and should trouble you for your influence in procuring me a removal from this Station, but I despair of success as all the Applicants for transfers have failed. I have, however, determined to remain until next Fall rather than resign...[225]

He then described a "Typhus" or "Buffalo Fever." After his retirement from the navy, Robert owned a plantation near Rockbridge, Virginia, and carried on his medical practice.

"Richard Walker Barton was born about 1794 on the farm, "Shady Oak." He studied law and practiced in Winchester, becoming a member of the Virginia Assembly in 1823, and was re-elected in 1824, 1832, 1835, and 1839. He served in the United States House of Representatives 1841–43. He died on his estate, "Springdale" near Winchester, in 1859.[226]

"William Matthias Barton was born about 1796, probably on the farm, but in his youth moved to Lancaster, where he became Clerk of the City of Lancaster. He was the legally appointed guardian of the estates of his cousins Washington, Edmond, and Graeff Barton, after the death of their father, [12]David Rittenhouse Barton, in 1818. He also handled some financial matters for [47]Mary Penington Barton. Early in 1822 he requested from [45]Edward Penington a legacy left for his father, "ill and indigent," by Mrs. Barton.[227]

Next came [47]Thomas Walker Barton, the Tommy mentioned in letters above.

[47]David Walker Barton (1801–1863) became a lawyer in Winchester.[228]

[48]Daniel Walker Barton (d. 1863), born about the same time, and perhaps a twin brother, attended Yale University and won his A.B. degree under Benjamin Silliman.[229] He contributed "Notice of the geology of the Catskills" to Silliman's *Journal*[230] and "On Virginia Flourspar," which was translated and published also in Germany.[231] His father's notes left in manuscript may well have been seen. It was certainly Daniel Barton whom Rafinesque visited in Winchester in 1825 and examined his cabinet "with rare fossils."[232]

[49]Juliana Barton was the last child, the darling of her family, and a favorite with cousins. She had been named for the aunt who had been named for Lady Juliana Susanna Penn.

David Rittenhouse Barton

[12]David Rittenhouse Barton was a younger son of the Reverend Thomas and Esther Rittenhouse Barton. He died in 1818.[233] Probably he was a brother who attended York Academy with Benjamin. A successful merchant in Lancaster, he entered into some investments with Benjamin. Both owned shares in the Columbia Bridge Company, and after Benjamin's death he aided Mary in redeeming the value of lottery tickets issued after the dissolution of the oversubscribed company.

David married Catherine Graeff in 1793, and they had seven children. The girls were [52]Mary, who died in infancy; [53]Esther Rittenhouse; [54]Mary Graeff; and [50]Catherine Amelia. The

225 Barton papers, APS.

226 Marquis Who's Who, *Who Was Who in America—Historical Volume, 1607-1896* (Chicago, 1963).

227 Gardner Collection, Edward Penington papers, Box 26, HSP.

228 Cassel, *Rittenhouse*, 29.

229 Note from Samuel Wood Geiser to J. Ewan.

230 *Amer. Jour. Sci.* 4 (1822): 249–251.

231 ibid. 277–278.

232 Rafinesque, *Life of Travels* 75, reproduced in *Chron. Bot.* 8(2) (1944): 326.

233 Cassel, *Rittenhouse*, 28; Leach, "Families."

boys were [55]John Graeff; Edmund Hill (1797–1853) and his twin brother, who became a physician; [56]Edward Hall, who lived until 1859; and [58]George Washington (ca. 1807–1851).

[12]Catherine evidently made a visit to Philadelphia to consult her brother-in-law. Later, on suffering an attack of [rheumatoid arthritis?] she called on Dr. Frederick Kuhn in Lancaster, who wrote to Barton 28 April 1800 telling him of his treatment: "Mrs. Barton has been with you some little time ago...frequent attacks of cramp; I was in hopes of bath of suction by invigorating the muscles would soon give relief—the arm has been twice swathed, the bandage moisten'd with Brandy, and it was believ'd with good effects...I had also contemplated the application of a Blister to the Neck, extending towards the shoulder...otherwise Mrs. Barton is of cheerful mind—good appetite."[234]

Paul Zantzinger reported to Barton that by 23 November 1800 David's family was in good health; and nephew [45]Matthias, visiting, wrote 12 March 1810 that "Uncle David's family are quite well."

[51]Thomas Pennant Barton spent a happy carefree summer in 1814 in Lancaster living with David and his family. Shortly after [50]Sarah's death, David wrote the grieving mother on 19 August 1817, and, after giving her financial advice, said: "I am sorry to learn that you are indisposed, but hope it is only transitory, and that we will have the pleasure of seeing you and [51]Pennant here shortly. [12]Kitty desires me to return her thanks for your invitation, and should she go to the City will with pleasure accept your kind offer. [9]Sister Z. enjoys tolerable health, though her spirits are much depressed. We are all well."[235]

The fourth nephew of Dr. Benjamin Smith Barton to become a physician was [57]Edward Hall Barton (1787–1859), who, with his twin brother, was born in Lancaster. He was to have graduated from Dickinson College in 1813, but left before graduation to enter the University of Pennsylvania in 1814 for his medical degree, which he received in 1817, with his thesis on epilepsy.[236] He then had a tour of European hospitals. François Michaux, who befriended the young student, complaining of current conditions in Europe, confided to John Vaughan in Philadelphia on 26 April 1816 that young Barton had been three months in Paris without receiving any letter from the United States "because all letters and journals were seized" just as in the reign of Bonaparte. Edward, he wrote, left for Edinburgh 12 September.[237] He spent some time in the West Indies studying particularly pulmonary diseases[238] before establishing himself for some years in Feliciana Parish, Louisiana. Indeed he was among the "respectable medical gentlemen of the Parish" who in 1824 established the rates they would charge for medical service.[239] He moved, "a gentleman of extended information," to New Orleans, where in 1835 he became one of the early professors in the Medical College of Louisiana (now Tulane University Medical School), an administrator of Charity Hospital, and in 1838 Dean and Professor of the Theory and Practice of Medicine.[240] Dickinson College granted him an honorary Master of Arts in 1830.

Visiting Charles Daubeny reported that Dr. Barton kept a meteorological register "for several years past at New Orleans and in other parts of Louisiana." Part of it, 1 August 1833 to

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234 Barton correspondence, HSP.

235 Penington papers, HSP.

236 *Alumni*, 10: he may be the Dr. Edward Barton reported as in Virginia—on a visit to relatives.

237 Savage & Savage, *Michauxs*, 318, 320.

238 Letter dated New Orleans 31 Jan. 1849 from Edward to an unnamed correspondent, MHS. J. G. F. Wurdeman (1810–1849), visiting Cuba from Charleston, South Carolina, had written to a friend 3 January 1846: "Dr. Barton of Havana, is writing, or gathering materials for a book on Cuba, and has enlisted my services to take the rates of dew point and thermometer for him. But I find it so troublesome...that I have resolved to decline doing it." Geo. E. Gifford, *J. Hist. Med. Allied Sci.* 24 (1969): 54.

239 Norwood, "Education," 365, 367.

240 Duffy, *Louisiana* 1: 320 and passim. Boyd Cruise *Index to Louisiana Quarterly* (New Orleans, 1956) cites references.

31 July 1836, was published with "N.B. includes part of our epidemic year, in which extremes of temperature were unusually great."[241]

During the Mexican War, Edward served as surgeon from 13 March 1847 until 9 April, and then was on reserve until 29 January 1848. He was one of the twenty-seven founding members of the New Orleans Academy of Science in 1853, among whom were thirteen physicians and John J. Riddell. Despite the boast of the native New Orleaneans, Dr. Edward Barton asserted that New Orleans was not among the more healthful cities of the country. His ideas on Yellow fever he communicated to George Engelmann in St. Louis on 10 January 1856,[242] and he was the author of a number of pamphlets: *A Discourse on Temperance and of the Applicability of Stimulants in a Warm Climate* (New Orleans, 1837), Sabin, *Dictionary*, 3836; *Introductory Lecture on the Importance derived from Medical Science in improving the Physical Condition of a Country, etc.* (New Orleans, 1835), a copy in the Huntington Library, San Marino, Calif. is inscribed "Rev. Mr. Wheat [spelling?] with compts of his friend the author."; *Introductory Lectures on the Climate and Salubrity of New Orleans, and its Suitability for a Medical School* (New Orleans, 1835), copy at the American Philosophical Society; *The Cause and Prevention of Yellow Fever...* (Philadelphia, 1855), Sabin, *Dictionary*, 3835.

In *The Application of Physiological Medicine to the Diseases of Louisiana* (Philadelphia, 1832), he criticized the liberal use of such chemicals as mercury: "It makes me shudder when I hear of 'heroic practice'; heroism in war is built upon the slaughter of our fellow creatures; it is little less in physic." So Duffy, *Healers*, 103, quotes him. Do we detect an early influence on a young nephew of Benjamin Smith Barton?

George Washington Barton (1807 or 1810–1851) was also born in Lancaster.[243] After a stormy period of schooling, he was apprenticed to a printer, perhaps the William Hamilton of that town, as was his cousin, Henry David Zantzinger. George became for a time a printer in Philadelphia, but discontented, his cousin, W. P. C. Barton, briefly interested him in botany. However, struck with wanderlust, he took ship to several countries and was shipwrecked on the coast of Buenos Aires. Returning to the United States he settled for a time in Nashville, Tennessee, resuming printing and becoming assistant editor of a journal. Still in his twenties, he returned to Lancaster, stumped for General Jackson's election, and studied law under James Buchanan. When thirty-one, he became Assistant District Attorney and a few years afterwards President Judge of the Court of General Sessions of the City and County of Philadelphia, but he soon resigned for the "greater activity of a law practice," in which he displayed "great eloquence." In 1849 wanderlust again struck him, when news of the Gold Rush reached him. He went out to San Francisco, where he opened a law office and became a judge, but he died the following year. He had married Catherine Clemson of Philadelphia, and they had one child, named for her mother.

This, then, was the family of Benjamin Smith Barton, closely knit, and of modest accomplishment and contribution in a struggling new nation. Efforts to assist each other financially and concern for the well being of each member of the family appear. [9]Matthias and Richard were the brothers with natural history interests. They contributed ostensibly to Benjamin's pursuits. Among his nephews there were four physicians: [13]William P. C. Barton, [57]Edward Hall Barton, [14]John Rhea Barton, and [58]Robert Rittenhouse Barton. Benjamin Smith Barton's son, [51]Thomas Pennant Barton, made a lasting name as a Shakespeare scholar.

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241 Charles Daubeny, *Journal of a Tour* (London, 1843), 148.

242 Engelmann Letters, Missouri Botanical Garden.

243 Cassel, *Rittenhouse*, 28; Harris, *Lancaster County*, 28–29. *A Biographical Encyclopedia of Pennsylvania of the Nineteenth Century* (Philadelphia, 1874), 447–448.

Chapter II

Youth

Lancaster, York, and Philadelphia

Lancaster, Pennsylvania, and Conestoga Manor on its outskirts were ideal for a growing family, at least until the unrest and dissension that brought about the War for Independence. The Barton children with their parents, until Esther died when Benjamin was eight years old, enjoyed exploring the nearby woodlands and shores of Conestoga River, their father naming for them the common trees, flowers, and animals seen. A knowledge of the natural world was especially appreciated by an Episcopal minister of his day. Rev. Thomas Barton had undoubtedly read John Ray's *Wisdom of God Manifested in the Works of the Creation* (London, 1691) and with him believed that "There is for a free man no occupation more worthy and delightful than to contemplate the beauteous works of nature and honour the infinite wisdom and goodness of God."[244] Here was laid the foundation of the knowledge that Benjamin later took with him on his expedition with his Uncle David Rittenhouse. Less robust than most boys, Barton drank deeply of his father's knowledge, and like him he was a book lover. He did not engage often in the rough and tumble games of his age group but spent more time with reading.

Before disaster had finally sent the Reverend Thomas Barton into exile, young Benjamin was a playmate of John Cope, the eldest son of Quaker merchant Caleb Cope,[245] and of Robert Fulton (1765–1815).[246] In Cope's home from 1775–1776, the captured and paroled British Adjutant General John André was quartered with other prisoners for whom there had been difficulty in finding housing.[247] The local patriots were infuriated and broke every window in the Cope home. André was confined to a radius of within six miles of Lancaster, and was charged to carry on no political activity, yet he enjoyed the hospitality and listened intently to the predominantly Loyalist discussions that took place in the home of Reverend John Andrews, Rev. Thomas Barton among the guests. Andrews at this time was head of the local classical school, Barton children among his pupils. Benjamin wrote in 1810 that his "earliest instructor in some of those branches of education which have ever been my pride and which now constitute, as they have long constituted, a portion of my real happiness," was Rev. Dr. John Andrews (1746–1813).

Meanwhile the Lancaster Patriots, mostly Scottish Presbyterians and Lutheran Germans, were building up enthusiasm for independence from England. Included among the Patriots were Paul Zantzinger, Rev. Barton's son-in-law, and William, Barton's oldest son. Yet André, of great personal charm and many talents, entered into the children's games and became tutor to John Cope, giving him art lessons in which young Benjamin Smith Barton and Robert Fulton joined, receiving their early training in disciplined classic style.[248] That young Benjamin

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244 John Ray, *Catalogus Plantarum circa Cantabrigam Nascentium* (Cambridge, England,1660), preface.

245 Edna Yost in *DAB*.

246 Sutcliffe, *Fulton*, 19–20; Carl W. Mitman in *DAB*.

247 Thomas Pym Cope (1768–1854) son of Caleb Cope, by Edna Yost, in *DAB*. Harrison, *Cope*.

248 A watercolor by André is reproduced in Harrison, *Cope*, opp. p. 404. Joel Barlow witnessed the hanging of André at Wespoint in 1780. He "thought he had never seen 'a politer gentlemen or a greater character of his age,' who met his fate with such 'an appearance of philosophy and heroism,'" James Woodress, *A Yankee's Odyssey; the Life of Joel Barlow* (Philadelphia, 1958), 58; Jacob Bigelow, *Disease*, 90, wrote of the purported spy that when his body was removed from its grave near the Hudson River for reinterment in England, his

benefited is shown in his surviving drawings, and in his stressing the importance of accurate detail in those who drew for him.

Soon after his parents left for New York, Benjamin and one of his brothers, probably David, left Caernarvon and the care of Polly Thornbury to enter York Academy, newly opened by Rev. John Andrews.[249]

Of Scottish descent, Andrews had been born in Cecil County, Maryland, and educated at the College of Philadelphia, from which he graduated in 1764 with high honors. He tutored for a year, then took the school in Lancaster. While there he was befriended by Rev. Thomas Barton and studied theology under him. Influenced by Barton, he went to London in 1767 for his ordination in the Episcopal Church, and as Rev. Barton before him, returned a "missionary for the Society for the Propagation of the Gospel." After serving a time in Lewiston, Delaware, and in Queen Anne's County, Maryland, he was removed from his rectorship, because he held pacific views and doubted the expediency of separating from the British. He was, unlike Rev. Barton, but like Rittenhouse and William Smith, among others, able to reconcile his allegiances with the new republic, and in 1780 he opened York Academy, which specialized in Greek and Latin, subjects Benjamin enjoyed.

In keeping with the times, there was great interest in developing a fit education for young Americans. The ideal of patriotism was stressed, especially emphasized in teaching the children of Loyalist parents. In 1785 Andrews left York to become head of the Protestant Episcopal Academy in Philadelphia, and when it became part of the newly established University of Pennsylvania in 1791, he became Vice-Provost, rising to the rank of Provost from 1810 until 1812. He was described as a systematic, punctual man, adaptable, generous, mild, and unassuming. Had he admitted the two sons of his former mentor on scholarships? As Provost of the University of Pennsylvania, he was in a position to influence the advancement of his former gifted pupil, Benjamin Smith Barton, throughout his university career.

The two years (1780–1782) at York Academy were devoted largely to classics and history and gave Andrews familiarity with the bright young pupil. When he was sixteen, Benjamin wrote an "Essay on the Vices of the Times," which his nephew, William P. C. Barton, found to be of "considerable merit." He stated the essay was in existence in 1836, but we have not located it. That young Benjamin was truly a patriot is certainly evident from the notes of an early essay, undated, but in the handwriting of a youth and on botany. He may have used it for his introductory lecture at the university in 1790:

> *The struggle we had made for the liberty of our injured country could, hardly, fail to interest the most unthinking, and the most unfeeling of mankind: the virtuous rejoiced in the events of a revolution which whilst it gave a stab to the pride and despotism of monarchs, laid the foundation of the liberty, and happiness, of millions of the present and of ages yet to come. Nor have we, yet, ceased to interest the attention of the rest of the world, as a Political People: but in proportion as we advance the purity, the extent, and the tranquility, of our present form of government:—In proportion as we advance to wealth and ease, it is obvious that the world view us chiefly as a people of Science. Even already, not withstanding the recent date of our political tranquility, the eyes of the learned in Europe are turned towards America as to a country, from which rivers of Literary*

skull was closely circled by a network formed by the roots of a small tree, which had been planted near his head. This was "a natural and most beautiful coincidence." André, quartered in Franklin's home during the British occupation of Philadelphia, 1777–1778, had taken the Benjamin Wilson portrait of Franklin, which now hangs in the White House. Carl Van Doren, *Benjamin Franklin* (New York, 1938), 638; Edgar P. Richardson, *Painting in America* (New York, 1956), 78.

249 Ernest S. Bates in *DAB*. Andrews, a classical scholar, was author of *Elements of Rhetorick and Belles Lettres* (Philadelphia, 1813).

> *Treasures are to flow. Much, indeed, ought naturally to* [be] *expected from a people, whose native genius is now universally acknowledged except by such whose minds have been mislead by the eloquent speculations of Raynall*[250] *much ought, naturally, to be expected from a country which even in the embryo state of its existence, gave birth to one of the most distinguished philosophers of this, or perhaps, any other age...*[Barton left the space blank. Whom would he have chosen?]*...America has already produced Astronomers, Mathematicians, Mechanics, who may, perhaps, vie with the first astronomers, of Europe.—I speak not of the genius of our country in the noble art of Painting: our greatest enemies have been obliged to admit, that in this art, three of our countrymen have exhibited some of the most splendid efforts of the pencil of which the present age can boast.*[251]

The loyalty and pride expressed here were evident throughout Barton's life in his writings to European colleagues: his emphasis on Buffon's error in writing that people and other animals were smaller and inferior in America compared with those in Europe; his protestations of the virtues of American government over monarchial in his letters to Thomas Pennant. That he was an admirer of Washington is clear from his letter to his brother Matthias 12 October 1806, when he sent a newly struck medal of the General.

From the classical influence of Rev. Andrews, Barton went from York, Pennsylvania, at the age of sixteen to enter the College of Philadelphia for general studies. In 1783 he became apprenticed to Dr. William Shippen (1736–1808)[252] and was able to attend classes at the College, though he did not obtain his degree before leaving for Edinburgh.

Shippen had attended Nottingham Academy near Rising Sun, then in Pennsylvania, which was administered by Rev. Samuel Finley, an uncle of Benjamin Rush. After graduation in 1754 from the College of New Jersey (Princeton), Shippen studied medicine with his father, William Shippen, Sr., then went to England, where he studied under Doctors John and William Hunter, taking his medical degree at Edinburgh in 1761. After visiting medical schools in Paris and Montpellier, he returned to Philadelphia in 1762 with casts and drawings given him by Dr. John Fothergill. Most of his teaching, however, was from human dissection. When Dr. John Morgan succeeded in the establishment of the Medical School in association with the College of Philadelphia in 1765, Shippen was appointed professor of surgery and anatomy. During the War for Independence he served from 1776 as chief surgeon and Director General of all hospitals west of the Hudson. After Morgan was dismissed by Congress for his criticism of lack of support for the army hospitals, Shippen became director-general of the Continental Army Hospital, during which time both he and General Washington came under criticism from Rush for their insensitivity to the needs of the wounded, and both won Rush's lifelong enmity. Shippen resigned from the army in 1781, held a chair in the University of the State of Pennsylvania, then in 1791, when it joined the College of Philadelphia and the Academy, he was appointed professor of anatomy, surgery, and midwifery in what was now named the University of Pennsylvania.

During these months in 1783 with Dr. Shippen, Barton showed a concern for the cause of intermittent fevers and disorders, and so he wrote to Joseph Priestley in England asking him

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250 Abbé Guillaume Thomas François Raynal (1713–1796), controversial French historian, four of whose books are now in LCP. Barton may have been aroused by his work on the settlements and trade of Europeans in the West Indies, *A Philosophical and Political History of the Settlements and trade of the Europeans in the West Indies ...To which is added the Revolution of America; by the same author. A new translation* (Edinburgh, 1782, 6 vols.). Lord, *Universal Biography*.

251 Barton papers, APS.

252 Carson, *History*, 55–58, 105–106; Francis R. Packard in *DAB*. Dr. Morgan decried the system of apprenticeship and its impact on the training of physicians in Philadelphia (Kobler, *Hunter*, 191); Carson, *History*, 53–57, 93.

if he would inquire on the chemical nature of the effluvia generated in marshy ground, and what British and Continental authors were writing on the subject.[253]

About this time or shortly thereafter, Barton made anatomical drawings, perhaps with Shippen's encouragement. Two of these survive, signed and dated 1784 (Figures 17 and 18).[254] Barton later referred to his instruction under Shippen in his own lectures, citing, for example, the instance of a patient of Shippen's having been given a large dose, twenty grains in one day, of Sace Saturni without suffering undue effects.[255] Charles Caldwell, who had been a pupil of Shippen, left us this description of him:

> *oldest of the Faculty, both as a professor and a man...one of the most elegant and gentlemanly personages of the time, and though possessed of an excellent and well-cultivated mind...yet was far from being accomplished in the art of reading. And, having previously written his lecture, he read it, from a manuscript before him, in a dull, cold, and monotonous manner...The authorship of it was not his own, but belonged to his favorite, much admired, and oft-quoted master, Dr. William Hunter...And though the theme* [the organic composition of a man] *is a rich and beautiful one, and furnishes matter for a splendid philosophical discourse, yet such was not the lecture long previously composed on it, by the celebrated Dr. William Hunter, and delivered at the time, by the scarcely less celebrated Dr. William Shippen.*[256]

Shippen retained his friendship with his apprentice through the conflicts within the University. His health declined from 1797 on the death of his son, a promising young physician, but he served as president of the College of Physicians of Philadelphia from 1805 until his death in 1808.

"Barton, Benjamin" appears in Dr. Benjamin Rush's class-book for the spring of 1785.[257] There were twenty-eight pupils in that class, but no lecture notes by Barton or by any other pupil for that year have been located. It was his excellent record in that class that served as the basis for Rush's recommending him as an entering medical student to the University of Edinburgh.

Barton had hoped for a course in botany, and so Professor Adam Kuhn (1741–1817)[258] was a particular disappointment to him. Like Joseph Banks when he entered Oxford, Barton found botany neglected at the College of Philadelphia. He had hoped to gain a technical background in one of his favorite subjects, for early in life he was entranced with the wealth of plants he found around him. Since, as a pupil of Linnaeus, Kuhn had mingled with Solander and Fabricius at Uppsala, Barton expected Kuhn would distinguish himself in American botany. A native Pennsylvanian, born 17 November 1741 in Germantown, Kuhn could have provided American botany with the background, the "System" that the Bartrams with all their field experience had not encompassed. From the lectern of the College, had Kuhn had Barton's devotion, he might have enthused pupils to continue in botany. How much was

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253 Barton to Priestley, 5 Sept. 1783; Barton papers, APS.

254 Barton papers, APS. *Portfolio* B284d.

255 Materia medica lecture notes taken by Richard Grier, 11 Nov. 1806 in Barton's class. CPSP.

256 Caldwell, *Autobiography*, 115–116; E. E. Hume in *DAB* Charles Caldwell (1772–1823) was a native of Caswell, North Carolina, acquiring his early schooling with tutors and in poor local schools. Although he began study for the ministry, he soon changed to medicine, earning his degree under Shippen, Wistar, Rush, Kuhn, and Barton in 1796. He will be mentioned on occasion in this book since his "caustic" *Autobiography*, called "the choicest repository of medical scandal in existence" will be cited, though acceptance in full of his comments must be tempered with the knowledge that he was an extremely opinionated and self-righteous individual.

257 *Register*, f. 36. HSP.

258 Carson, *History*, 64–65, 93; Willis L. Jepson in *DAB*.

Kuhn's failure to continue in botany due to the turmoil resulting from the War for Independence and how much to his own personality?

Barton strained to fill the void. It was, however, to Kuhn that Barton so often turned in medical consultation. Barton declared his disappointment in an open letter to Carl Peter Thunberg, professor at Uppsala, "Alas! the only one pupil of your predecessor [residing in America] has added nothing to the stock of natural knowledge."[259] When Fabricius of Kiel University inquired in 1791 of Kuhn, the second American pupil to have studied under Linnaeus, Barton replied "to the care of Mr. Ebeling," on 20 December 1795:

> *Dr. Kuhn is still living, and in health. I showed your letter to him. He seemed glad to hear of your welfare. But of natural history he is not studious; and he appears no way anxious about the progress of this amiable science. I have often wondered why the immortal Linné attached himself, so strongly, to a man, who possesses as small a share of the enthusiasm for natural science as any physician I am acquainted with. As a practical physician, however, Dr. Kuhn is an useful man. He is, at present, the Professor of the Theory and Practice of Medicine, in the University of Pennsylvania.*[260]

Kuhn had studied medicine with his father, Dr. Adam Simon Kuhn, before leaving for the University of Uppsala in 1761. Linnaeus was unquestionably anxious to continue the American contact for plant specimens, so importantly and successfully inaugurated earlier with the aging John Bartram and with his countryman and pupil, Peter Kalm, and so when Kuhn arrived from Philadelphia he was shown particular attention for what, in the end, proved a husk of the hoped-for fruition. That John Bartram had been very much in the thoughts of Linnaeus is shown in the letter from the Uppsala professor to the elder Dr. Kuhn dated 2 February 1766: "If you should meet Mr. Bartram, who wrote to me and sent me some plants, I beg you to make my respects to him, and tell him that amongst the plants there was only one that was really new; which, with a high single stalk with numerous setaceous leaves on the stalk, resembled in appearance the daffodil and should be classed with the genus Helonias."[261]

After leaving Uppsala on his way to Edinburgh, Kuhn met the London coterie of naturalists, including John Ellis, and arrived at the University in Edinburgh in 1766, taking his M.D. the following year. Benjamin Rush, also a student at the time, wrote back from Edinburgh to Dr. John Morgan in November 1766 that Kuhn "was prosecuting his studies with great diligence" and that "the professors speak in the most exalted manner of his abilities and Dr. Cullen more especially in my hearing said that he knew no person in the world better qualified to teach Botany and Materia Medica."[262] Kuhn's thesis entitled *De Lavatione Frigida* (Edinburgh, 1767), dedicated to Linnaeus, was his only publication in a lifetime.[263] In January 1768 he returned to America. The *Pennsylvania Gazette* for May 5th announced that Dr. Kuhn would give botany lectures at his house in Market Street at six o'clock beginning on May 11th. He offered the course the following year, then dropped it. He began teaching Materia Medica at the College of Philadelphia in May 1768, having been unanimously elected upon his application, and he continued until 1789, when Dr. Griffitts was chosen to succeed him. He had succeeded to the chair of the Theory and Practice of Medicine until the union of the College of Philadelphia with the State University of Pennsylvania to become the University.

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259 Barton papers, APS, copy.

260 Barton papers, APS, copy.

261 [P. Griffiths], *Eclectic Repertory* 8 (April 1818): 9; Philadelphia reprint, 15. [*Helonias* L., e.g., *Helonias bullata* L., swamp pink, is an American native. The genus in 1766 was more heterogeneous than today. IPNI. ITIS.]

262 Butterfield, *Rush*, 1: 29, as "Mr. Coon," 30 fn. 7.

263 But, given as an open letter, Adam Kuhn, Philadelphia, 5 May 1786, to J. C. Lettsom, on the treatment of an infected tooth with "a few doses of bark [*Cinchona* L. ?] daily for about a week," Pettigrew, *Lettsom* 3: 239-241.

He was then Professor of Physic till he retired in 1796 to devote himself to his private practice. He also served on the medical staff of the Pennsylvania Hospital, was consultant to Philadelphia Dispensary, and in 1808 succeeded Dr. Shippen as President of the College of Physicians and Surgeons. He was also a member of the American Philosophical Society and the Massachusetts Medical Society.[264]

Kuhn delivered his lectures "at a speed at which it was possible to copy them almost in their entirety," and they were almost pure Cullen. "Diseases are best known from experience," he believed, and weak sage tea was his favorite panacea. Allowing only a given number of minutes for a visit, he was conscientious, but not creative, a busy and successful physician especially for the wealthy, "the entire economy of his life a specimen of unsurpassed regularity and order...punctual to the minute." His lectures were "neither inappropriate nor uninstructive, its style, manner and delivery mere commonplace...characterized by doctrines and notions of Cullen." He was, according to Caldwell, "by far the most highly and minutely furnished specimen of old-school medical production." Dressed in black breeches, a long-skirted waistcoat and snuff-colored coat, "he carried [as was the custom for physicians in Europe] a gold-headed cane and a gold snuff-box."[265] Dr. Griffitt's eulogy confirmed the opinion of mutual friends that "Dr. Kuhn was not remarkable for the powers of imagination; but in sound judgment he greatly excelled."[266] The few theses dedicated to him by Medical School students are reserved in their acclaim. Davidson on croup, Seaman on opium, and Cutbush on insanity are examples of students who so honored him.[267]

It was to Kuhn that Barton usually turned for medical advice, both for himself and other members of the family. They consulted and exchanged views, and on controversial medical practice they were usually on the same side opposing Rush. On the back of a letter from another correspondent Barton made the following note: "Oct. 4, 1810, Dr. A. Kuhn told me, to-day, in answer to my queries on the subject, that from his observation independent of reading, it has been and is his opinion, that gonorrhea and siphylis depend on the very same virus..."[268] So did both then treat gonorrhea with mercury? On a visit to Lancaster, Kuhn treated William Barton who wrote to Barton 5 March 1814: "Dr. Kuhn thought me seriously ill; and I believe, he treated my disease (to which I could not get him to give a name) very judiciously. He once said it was a complication of disorders...treated me according to (what I believe you call) the antiphlogistic plan, that is, he almost starved me."[269] Of Barton's other professor, Benjamin Rush, more later.

Barton was at first housed with his oldest brother, William, then with other young men in a boarding house at 184 Race Street near the Moravian Church, not far from the hospital. Situated as it was near the outskirts of the city, there was ample opportunity for a nature loving youth to wander the fields and groves nearby. It was not long before Benjamin heard of the garden across the Schuykill devoted to a collection of native plants brought home from the collecting forays of John and William Bartram. John Bartram's farm had become more than a farm, or a nursery, in essence it developed into a botanic garden. It had become a meeting place of naturalists, a Mecca for travelers, and when Barton became a professor, a classroom of botany as Barton took his materia medica and natural history classes there for study, and William Bartram furnished fresh material for student experiments. A grateful student, William Steptoe of New London, Campbell Co., Virginia, wrote to Barton 22 October 1813, as he introduced his neighbor, Mr. Archer Austin, for pupilage: "Ever since that happy aid to

264 Brown, "Kuhn," 163–177.

265 Caldwell, *Autobiography*, 115–124. Bell, "Medical Students," 14.

266 S. P. Griffitts, quoted in Thacher, *Biography*, 352.

267 Robert Gamble Waiters Davidson (1773–1804), *An Inaugural Dissertation on Suffocatio Stridula, or Croup...* (Philadelphia, 1794); Valentine Seaman (1770–1818), *An Inaugural Dissertation on Opium...* (Philadelphia, 1792); Edward Cutbush (1772–1843), *An Inaugural Dissertation on Insanity...* (Philadelphia, 1794).

268 Verso of T. J. Paschall, 1810, letter to Barton, Barton papers, APS.

269 Barton papers, APS.

my youthful mind, that elysian season, when I together with your other delighted pupils, used to visit in our rambles those beautiful seats of Botanical science which I remember near Philadelphia...,"[270] [Bartrams' Garden and the estate of William Hamilton, the "Woodlands" (Figure 16).]

At some undated time, Barton wrote "Concerning Bartram's Garden, etc.":

> *Mr.* [John] *Bartram was perhaps the first native American who conceived the idea of establishing a botanic garden in the country for the reception of various vegetables of the country as well as those of other countries, and of traveling for the discovery of them. To effect this laudable & important purpose he purchased a convenient piece of ground on the banks of the Schuylkill, about 5 miles from Philadelphia. A more happy situation could hardly have been chosen. It possesses that variety of soil & exposure which are indispensably necessary to every botanical garden, where plants of opposite soils and climes are to be associated together. It occupied about 5 acres of ground, the eastern part of which is washed by the Schuylkill.*[271]

William Bartram, a "man of original observation, of modest merit, and unaffected manners,"[272] was one of nine children, the third of five sons, born to John and Ann Bartram on 9 April 1739, in the stone house purchased about 1727 by John and enlarged "by his own hands" near the Schuylkill River in Kingsessing Township, not far from Philadelphia. The house still stands, now preserved and open to the public. William attended a local school and worked on the farm. From early youth he loved the out-of-doors, had absorbed much of his father's lore and, according to William P. C. Barton, was "one of the most ambitious lovers of nature I have ever seen."[273]

Finding the right life-work for his less than robust son had been a worry for John Bartram. He had not the physical make-up for a farmer, and he did not take to the confining craft of engraving, an art Franklin had offered to teach him. He showed no inclination to follow his older brother Moses (1732–1809), who had become an apothecary, then a physician.[274]

When William was about fourteen he began drawing birds, then turned to other animals and to plants, continuing until he was sixty-two years of age, when failing eyesight prevented his continuing. The vitality of his drawings came from his native skill and his direct observation of living or freshly gathered specimens.[275] Opportunities for natural history artists to make a living in this period were nonexistent, and possibly William's only surviving portrait is a decidedly primitive one of his father.[276]

William was first apprenticed to a merchant in Philadelphia, then in 1761 he left to enter the mercantile business with an uncle in Wilmington, North Carolina. After four scarcely satisfying or successful years, he abandoned the business to join his father, now King's botanist, on a natural history exploration of the Southeast, having Peter Collinson of England as a patron. Instead of returning northward with his father, William became enchanted with

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270 Barton papers, APS.

271 Barton papers, APS.

272 So Samuel L. Mitchill described him in *Med. Reposit.* Hex. 2. 5: 302. See Harper, *Bartram's Travels*, xvii–xxxv, for life summary.

273 Quoted in Ewan, *Bartram*, 43.

274 His M.D. thesis, Exercitatio medica inauguralis de victu (Philadelphia, 1790). Charles Evans, American Bibliography...down to and including the year 1820 (Chicago, 1903–1959), no. 22328.

275 Representative of Bartram's native skill and direct observation is the previously unpublished drawing of the Long-tailed weasel (Figure 48) intended for Barton's *Elements*. [Today, *Mustela frenata* Lichenstein, 1831. MSW. ITIS.]

276 Art historians agree that the attribution in Josephine Herbst, *New Green World* (London, 1954) opp. p. 32, to C. W. Peale is erroneous. Can it have been one of Peale's sons at an early age?

the River St. John, and remained in Florida to establish a plantation and to cultivate indigo. The venture proved disastrous, and William, dispirited and in poor health, returned to Kingsessing. The success of the trip of the two Bartrams, however, for the novelties they found, which included the rare *Franklinia*,[277] stimulated the interest of British botanists for another trip to the South for William. One patron, Sir Joseph Banks, President of the Royal Society, offered William one shilling sterling for every new plant he might discover, but William scorned the offer, figuring that would amount probably to a mere £25, new species being so scattered, and that he would require at least £100 a year, and several years to make a search covering East and West Florida and provinces along the way. On the suggestion of his father's longtime patron Peter Collinson, Dr. John Fothergill became the prime supporter for the five year journey that resulted in William Bartram's *Travels*, which during the early friendship of William and Benjamin Smith Barton lay in manuscript.

Young Barton soon became a regular visitor to the garden, and a mutual admiration developed between the quiet, mild-mannered older man, and the bright enthusiastic youth. Long were their discussions, and William soon brought forth the journal of his trip through the Southern states, his notes on birds, weather, plants, and so much more. William's stories of the Indians he had met and their artifacts particularly excited Barton, who was inspired, and his interest in travel and natural history assumed a clearer focus. He soon perceived that the older man needed prodding to put into print his vast knowledge, and he longed for the publication of the journal. In fact, after the *Travels* did appear after painful delays, William published very little. His modesty in fact led him to decline an offer from the Board of Trustees of the College of Philadelphia, 2 April 1782, to become Professor of Botany.[278]

Among Barton's papers is the "Poem re Bartram's Garden," suggesting Benjamin Silliman's *Letters of Shahcoolen, a Hindu Philosopher residing in Philadelphia, to his friend El Hassan, an inhabitant of Delhi* (Boston, 1802), wherein a visit to Bartrams' Garden is the subject. The "Poem" reads:

Stanza 2:
And up the hill with cedars spread
where vines thro spicewood thickets roam
I took the winding path that led
To Bartram hospitable dome.
Stanza 3:
Thick towering Oaks around the rose
Tough Hickories tall and Wallnuts wide
White Dogwood Chinkopin and sloes
Were clustered round on every side.
Stanza 14:
The City's painted skirts were seen
Thro misty smoke ascending high
While on the Schuylkill's glassy scene
Canoes and sloops were seen to ply.[279]

The poem also brings to mind Alexander Wilson's "Solitary Tutor."[280] He was but one of the many visitors to the Bartram home. Treasured by William Bartram in his Commonplace Book are the lines from an unidentified poet, but reminiscent of Alexander Wilson. Indeed for a time Wilson lived in the stone house on the Schuylkill. The lines articulate the garden and its gardener:

277 [Franklin Tree, *Franklinia alatahama* Bartram.]
278 Gilbert collection, CPSP.
279 Pages 138–152.
280 In *The Poetical Works of Alexander Wilson* (London, 1844).

On purpose he planted yon trees
That birds in the cover might dwell
He cultured his thyme for the bees
But never would rifle their cell
Ye lambkins that play'd at his feet
Go bleat and your mater bemoan
His musick was artless and sweet
His manners as mild as your own.[281]

Barton relied on the mosaic of experience of his esteemed friend for information during the passing seasons on flowering, the arrival and departure of migrant birds, the habits of other animals, and of the American Indians. Early visits were not recorded, but from 15 April 1791 until 18 September 1814 Bartram noted eighteen visits to the garden, and each of his letters urged a visit.

Bartram's generosity rested on his nature and on his friendship for the eager, intelligent younger man. Some have insisted that Bartram's role in providing facts for Barton's teaching and writing bordered on exploitation: that petal-thin line between just recognition and piracy. Barton urged his mentor again and again to publish, and became aware that his friend had little inclination to. Morsels of information from Bartram went into notebooks, onto the backs of letters, scraps of papers at hand (Figure 15), old bills, and ultimately into chapters in Barton's lectures, his *Elements*, into issues of the *Philadelphia Physical and Medical Journal*, and a variety of his other natural history writings. Over the years, with the results of his own reading and observations made on travels throughout northeastern United States, Barton incorporated into his publications what he had learned from Bartram (and his queries were numerous), making accessible to readers and future naturalists what would have been lost of William's extensive knowledge. In *Fragments* alone, he referred sixty-six times to "my good friend, Mr. William Bartram, a Gentleman who has contributed much to our knowledge of the natural productions of North America," or in similar manner. It became difficult to distinguish what had been Barton's own observations from those of Bartram or his other correspondents. In later years, especially for European readers, when he left out the names of Americans who had contributed information, he became in the United States a target of growing criticism and antagonism passed from one person to another. In some measure it was quite just, but the idea that Barton was a "closet" naturalist was unfounded. Like his European colleagues, he usually cited only published records.

These early days in Philadelphia were busy ones for the young student, but he remembered his former York teacher despite his studies and illness, for he wrote to Rev. Andrews at York, Pennsylvania:

Philadelphia May 27, 1783
My worthy Friend,

I am unwilling to begin this letter without prefacing it with an apology for my long silence. I would then indeed have written to you before this, but for near six months after my coming to Philadelphia, I was obliged to apply myself so closely to my studies at the University, that I was unable to do any thing else.—Since that time I have had a very severe spell of sickness, which although it did not confine me to my bed, I never expected to overcome: it was something of a consumptive habit, of which however I believe I am now perfectly recovered. After what I have said, you will readily believe me, that

281 Keighley of Cambden, copy deposited at APS.

my silence was not owing to neglect, but entirely to the causes I have already stated.

I heartily congratulate you upon that glorious event the Peace, which I consider the greatest blessing, that could have befel this country in particular, and the world in general.—You cannot imagine what an alteration it has made in the face of affairs. Every thing seems smiling: Commerce and Agriculture, Arts and Science now flourish, and the Delaware is full of Vessels from almost every part of the world.—I have several books to send to you, but I cannot think of troubling Mr. Holtzinger with them; but you may depend the[y] shall be sent by the first good oportunity.

If it is probably I shall never see you again, I send you by this oportunity my own miniature drawn by myself, which I beg you will keep for my sake. It is generally thought to be a likeness; except that the colouring is quite to[o] high.—Bad as it is it will tend to put you in mind, that you have a sincere Friend by the name of

Benjamin Smith Barton[282]

The miniature is lost, but Barton was indeed to see his former teacher again. Through the years, through Barton's difficulties and ambitions in professional life, Rev. Andrews was among the university administrators who recognized his potential.

Barton did not complete his medical degree, because an opportunity irresistible for the eager youth was presented to him: that he accompany his Uncle David Rittenhouse into the wild west with all the novelty it held, to visit Indians in their settlements, in return for putting into practice, should the occasion arise, the medical knowledge he had acquired.

Glorious Adventure

After his stimulating sessions in the classrooms of Rush and Wistar, or as an apprentice walking the wards with Shippen, it was a refreshing change and an exciting prospect for Benjamin Smith Barton to spend months in 1785 in the wilderness of mostly unexplored territory, western Virginia, Pennsylvania, and eastern Ohio Territory, in company with his revered uncle, David Rittenhouse. "I well recollect," he spoke in a eulogy for his uncle, "how great were his pleasure and satisfaction, in contemplating the Flora of the rich hills of W[h]eeling, and other branches of the Ohio, when I accompanied him into those parts of the union, in the year 1785. In this wilderness, he first fostered my love and zeal for natural History."[283] The occasion for the expedition was the boundary survey carried on by a commission of the states of Pennsylvania, Virginia, and Maryland, for extending the Mason-Dixon Line westward, establishing the boundary between Pennsylvania and Ohio.

Barton's part in the work of the commission is scantily recorded, but he would now put into practice his medical prowess learned under Dr. Shippen. Of lasting importance to Barton were his observing, firsthand, Indians encamped, and seeing the western slopes of the Allegheny Mountains with their primeval forests and meadows—such wilderness as he had never before experienced.[284] His medical apprenticeship of two years rendered him, as his brother William recorded, "even at that early period in life, an useful associate of the commissioners." The medicines taken along on the trip are referred to in the diary kept by Rittenhouse.[285]

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282 Barton papers, APS. Probably Barton's copy.

283 Quoted in W. P. C. Barton, *Rittenhouse*, 606.

284 BSB, Commonplace Journal, vol. 1. HSP.

285 Rittenhouse papers, B.R. 51 d, APS. His diary enters expenses to 1 June. His meterological observations, to 30 Sept. contain no references to Barton. Hindle, *Rittenhouse*, 253–270, relates the significance of the survey.

It was in the main a compatible party, for Rittenhouse wrote home to his wife Hannah that "Colonel Porter[286] is attentive, and cousin Benjamin has recomended himself as an agreeable companion, to all of us, and I could almost call Mr. Ellicott a congenial soul."[287] Barton's health must certainly have benefitted. His uncle reported his own improvement. For some of the time "we had a very decent woman to cook for us, but some little family broil obliged us to pack her home again. Our boys have, however, learnt from her to bake good bread, and to cook much better than they did."[288]

Barton began his Commonplace Journal at Mr. Hidrick's on Sunday, 22 May 1785. He rode along the "Potomack," crossed Fifteen Mile Creek, and lodged that night at Old Town, Maryland. His *Journal*, preserved at the Historical Society of Pennsylvania, agrees essentially with Colonel Porter's.[289] Old Town amounted to about twenty houses according to Barton; Porter reported "about a dozen...now rather in the decline." On some old maps it was called Cressup's for the settler who was then in his 103rd year, and although some of the party visited him, Barton did not join them. Rittenhouse entered into his diary his expenses at Old Town: for "tar and oyl 1.8—wheelright for a new axle Tree, 7.6"—and "Smith work for ditto, 7.6." On the 23rd Rittenhouse, Barton, and some others visited Alum Rock, a ridge of "shistus" or slate strongly impregnated with alum. Pyrites and a great number of shell impressions were found. Two days later—Porter says three—they reached Wills Creek, where they were obliged to "take our carriage to pieces and cross in a canoe. We led the horses, which swam." Then Porter reported: "26th. This morning broke the hind axletree of our carriage at Mr. Guynes about 5 miles dist. from Fort Cumberland—fell to work and put a new one in; but not without some difficulty for want of proper tools." Fort Cumberland (Allegany County, Maryland) had been built at the forks of Wills Creek and the Potomack during the Indian War of 1755. The post now numbered six or seven houses, constructed chiefly of new wood. "I was told," wrote Barton, "that in a short time it would be a place of trade in this part of the country."

Barton was impressed the next day by the chestnut and the "hickery (*Juglans*, of different kinds) but especially the White-oak (*Quercus alba*), which abounds so much on the eastern side of the mountains...vast quantities of *Rhododendron maximum* (Great Laurel, Rosebay), *Kalmia latifolia* (called Laurel), and the *Gaultheria procumbens* or Mountain tea." He and Rittenhouse examined the rocks for shells, but they did not find those that had occurred in the vicinity of Old Town.

Barton made no entry in his *Journal* on 27 May, but Colonel Porter informs us that "27th This day found the roads bad beyond description—Swampy, rocky & mountainous. Arrived at Mr. Tumblesons. dist. 20 miles." Tumblestones Tavern (Tomlinson's in Rittenhouse's journal) of Nicholas Cresswell[290] "on top of the Allegany Mountains" is near "the border of present Allegany and Garrett counties, Maryland."

"28. The roads much the same as yesterday. Lodged at Mrs. Rices—dist. 20 miles." That day the temperature stood at 32 degrees Farenheit, and Barton mentioned that there was a "considerable fall of hail...the weather on these mountains is, in common, very disagreeable." Barton may not have been well, but still the next day was memorable. Rittenhouse visited Ohiopyle Falls, made a sketch and wrote a description, which Barton "formed into a drawing, of which an engraving done with considerable neatness" (Figure 13) appears as a frontispiece

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286 Andrew Porter (1743-1813), b. Montgomery Co., Pennsylvania, had a varied career as teacher, soldier, and farmer. He was commissary for the party surveying the southwestern Pennsylvania boundary, later becoming surveyor-general of the state. One of his sons he named David Rittenhouse Porter, the other for James Madison. James H. Peeling in *DAB*.

287 Andrew Ellicott (1754-1820), b. Bucks Co., Pennsylvania, surveyor and mathematician, publisher of *United States Almanack* (Chatham, Penn., 1782-). After a life of surveying he became professor of mathematics at West Point. Harrison G. Dwight in *DAB*. The quotation is from W. P. C. Barton, *Rittenhouse*, 310. Ellicott had the reputation of being testy.

288 W. P. C. Barton, *Rittenhouse*, 315.

289 Porter, "Sketch," especially 268-281.

290 Thornley, *Cresswell*, 114.

in the February issue of *Columbian Magazine* 1 (1787): 284.[291] Rittenhouse had described what is now called the Falls of Yochiogeny, which had a perpendicular drop of twenty feet, "by far the most magnificent of any thing of this kind in the state of Pennsylvania." The river was calculated to be perhaps eighty yards wide and unites with the Monongahela. Porter recorded the name as the Youghogana or the Youghiogheny. Barton evidently referred to the lichen *Usnea*, an epiphyte, when he observed "the various kinds of parasitic mosses which cling to [the trees] for support and life. The leaves of many trees were just putting forth. The several wild plants, such as the May-apple (*Podophyllum peltatum*), the Wild honeysuckle (*Azalea viscosa*?) and others were not so forward here as they were near Lancaster."

On 29 May the party visited "Great Meadows," the property of George Washington. It was here that General Washington had capitulated to the French and Indians. In this lovely area Barton concluded that "it was imposible not to reflect, how inconsiderable, how inconspicuous, is sometimes the commencement of the happiest, the most glorious career of human life." Was he reflecting on the glorious career that lay ahead for Washington despite his defeat here, or had he decided that he had found his own true calling, that of a naturalist?

From this point on in Barton's *Journal* it becomes less clear just what material on Indian tumuli represents his own on-the-spot observations, and what he may have recalled and interpolated in later years, either from his own observations, or material gleaned from others. He describes Indian tumuli, "comonly known," he says, as Indian fortifications, and he discussed the Redstone Settlement of Fort Burd and an Indian Fort (now Brownsville on the Monongahela River). He writes of the tumuli that "some are circular, and some quadrangular, 8–10 feet across in extent...human teeth and other bones...earthen ware, well burnt and likewise (it is said) glazed and have been found in walls." White oaks on these tumuli were believed to be "at least 300 years old."

Andrew Ellicott, commissioned by Virginia, his brother Joseph, and Colonel Joseph Neville, had joined the survey at "Beeson Town" in the Laurel Hills district on the 30th.[292] A few lines in Barton's Journal tell us that when the party was a mile and a half west of the Ohio River, they "arrived at Fish Creek, pitched our tents, and although the weather was extremely warm, we found it necessary to kindle large fires, to protect us in some measure, from the armies of musketoes which assailed us." On 9 June "Docr. Barton, my Brother [Joseph Ellicott] and Self went to an old Observatory notwithstanding a heavy Rain."[293] Here some of the party evidently followed the old Indian Trail westward from Redstone, which crossed the Ohio River at Grave Creek, just north of Fish Creek, the path continuing on to the great series of Indian flint pits at Zanesville, Ohio. "Fri. 14th, Encamped about forty perches to the east of the line," recorded Barton. In a letter to his cousin Elizabeth Rittenhouse, he wrote: "Tell Cousin H[etty] she may depend upon the promise I made her, of drawing her a landscape; and probably some other pictures. I have already taken drawings of several curious and beautiful flowers, together with one of the falls of the river Youh: this last I will send her as soon as opportunity offers."[294]

On the same occasion, Porter recorded: "17th. Rode in company with Mr. R[ittenhouse] & B[arton] to the Ohio River, went by way of Ohio Court House [Marietta] which is built of Logs & Cabin Roofed. The Goal the same trifling kind of building. The town consists of the Goal Keeper & Family. The Country is of a Hilly, Rich Soil, and abounds with Lofty timber of various kinds. The Ohio we judge to be about ½ Mile in width at Mr. Woods—The Flat narrow & very rich fertile soil—The Country is but thinly settled."

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291 Hindle, *Rittenhouse*, post 50, and 264, reproduces Barton's drawing of Rittenhouse's sketch juxtapositioned by his present day photograph of Ohiopyle Falls, which are near the border of Somerset and Fayette Counties, Pennsylvania.

292 Mathews, *Ellicott*, 41.

293 Mathews, *Ellicott*.

294 W. P. C. Barton, *Rittenhouse*, 13n.

The most important events for Barton during his summer with the boundary survey were, without doubt, his visit to an Indian village, and seeing Grave Creek, the mammoth Indian burial mound that today is in the city of Moundsville, south of Wheeling, in West Virginia. It has been concluded that it was the work of the Adena people dating from 250 to 150 B.C. The significance of Barton's visit and its bearing on his *Observations* of 1787 will be considered with his writings on Indian lore. Grave Creek, wrote Barton, is in "one of the most hilly countries I have ever seen. It looks, as Mr. Rittenhouse has well observed, as if it had been cut by imense deluges of rain." The tumulus about one half mile from the Ohio River, and about the same north of the mouth of the Creek, measured 600 feet in circumference, 210 feet high according to "Mr. Rob. Porter [Andrew Porter]."

A white oak 2.9 feet in diameter was growing on the tumulus, also Black oaks "at least two feet in diameter."[295] Barton recorded that "Sun. 22nd" they were about twenty miles below the mouth of Grave Creek, near the banks of the Ohio, on the west side where "there were tumuli."

Barton's journal, as such, seems now to have been neglected, for he was concentrating on writing his notes on mounds and on Indians. The party now turned northward, and 29 June found them a quarter of a mile from Wheeling, and according to Porter, on 3 July "a quantity of fine fish were caught in the Wheeling, white and yellow perch and sturgeon." Porter, Rittenhouse, and Barton, whom Porter referred to as "B.," made excursions together. On 14 July Porter recorded "moved our camp on the waters of Buffalo about 1½ mi. before the line." On 25 August Porter wrote "moved our encampment to the North Side of the L[ittle] Beaver" where they spent some weeks in the area of the Beaver and Little Beaver rivers, camping at least some of the time on Mahoney River in Ohio.

Barton's manuscript, "Pa.—Indian visits" at the Historical Society of Pennsylvania is foolscap size made up of stitched portions as edited in later years with page gaps of blank leaves suggesting space for additions he intended to make. The first page, the whole unnumbered, is titled "Mahoning Salt Springs," and begins: "The Mahoning Branch of Big Beaver upon which we were encamped, receives its name from an Indian town, some miles above the Salt Springs." Barton did not visit Salt Springs, which is on the north side of Mahoning Branch. His record of his visit to the Indians is detailed although not complete:

> *Such war-posts are common in Indian villages. When a war-captain has signified his intention of going out to war, he orders what game is necessary for a feast and sacrifice, and has a war-post set up in, or at a small distance from, the village. This post is comonly made of a pealed or shaved saplin, from ten to fifteen feet in height, and is painted red.*
>
> *This post may be considered as the standard of the warrior. Applications are made to join him; or he solicits the aid of such persons as he wishes to accompany him to the battle: or he waits to see what effects the feast and war-dance round his standard will have upon the minds of the young men, or warriors. At this post, every man that intends to accompany the captain, appears in his war-attire: viz. with his head shaved, except a spot called the scalp, about four inches in diameter, on the back of the head. This part is bedaubed with grease and red paint, and is covered with white plumes, a preference being given to those of the eagle, on account of the ferocious nature of that bird: for the Indians, under the influence of the doctrine of signatures, imagine that the feathers are capable of communicating to the young soldier the strength and bravery of the bird.*

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295 The best concise account is Norona, *Mound.* Grave Creek Mound was visited by Cresswell 5 May 1775 (Thornel, *Cresswell,* 71), by Heckewelder 8 Dec. 1788 (Wallace, *Heckewelder,* 231), and by Meriwether Lewis, who gave its measurements, 10 Sept. 1803 (Quaife, *Lewis,* 41).

The armes required on this occasion are; a tomahack, a scalping knife, and occasionally a war-billet and spear.

If there be in the place any person, that has lost a son, a daughter, or other relation, either by the accidents of war, or by the natural outlets of death, and is desirous of having another adopted in his stead, such persons will present a belt of wampum to the captain, who conceives it to be his duty to use his endeavours to take a prisoner; and as a token, that such prisoner is not destined to death, this belt is hung round his neck when he [is brought] *into the village.*

At their departure from the village on going into war, the warriors give a number of hideous shrills or yells. They all march in one line, and endeavour to step in one step, so as to make it appear, that only one person had marched along. The captain marches in front, and the rest follow him all according to one rank or respectability: for war will always create a distinction of ranks in society. Every person has, besides his gun, tomahack, war-billet, and scalping knife, a small bridget or pack upon his back, containing principally a small quantity of provision, leather for mending his mockasins, paint, and a little looking glass. The one in the rear, carries the kettle to cook in. One of the company has the particular charge of the conjuring Bridget. This is made up of little images, and a number of very small bundles tied up, which have been given to the company by the conjurors, or priests, to afford them success, and to assure them from injuries.

The captain, who conducts the expedition, points out the route, the time, the place, and the order of encampment. He sends out the hunters, condescends to give directions in what manner the victuals are to be cooked, and officiates as carver and divider at the times of eating. All this is done with many superstitious ceremonies.

When the party returns from war, they march in the same order which they observed in going out, with this difference, that the scalpbearer marches next to the captain, in front. These scalps are all cut in a circular form, and according to the size and age of the person from whom they have been taken. They are from one inch and a half to four inches in diameter. Each scalp is well stretched and dried in a small hoop made for the purpose, and is also painted. They are then strung in strings, long enough to give them room to play at the end of the stick to which they are fastened. This stick, which resembles a fishing-rod, is from six to ten feet in length, and is carried as nearly as possible in an erect position. The prisoners follow next, but never in an undivided body, there always being placed some warriors between them to prevent them from making their escape. The plunder, horses, &c. are placed in the rear.

The prisoners, who are stripped of all their cloths, except what is necessary to cover their nakedness, have their heads shaved, and painted with a species of dirty red paint: Such as are destined to be tortured, are blackened.

When the war-party approaches a village, or hut, or when they discover any person or persons in the woods, the scalp-hollar, or yell is given, and that as many times as the number of the prisoners and scalps, which they bring with them. This yell is not only intended to announce the coming of the party and their success upon the expedition, but to give notice that victuals may be prepared, and the inhabitants may be ready to receive the

> *prisoners, who are soon to run the gauntlet, as we commonly term it. This shocking ceremony, one of the most disagreeable even to the character of savage society, is...* [end of account].[296]

3 September, Barton's diary: "In crossing the mountains today it snowed, and the wind was very cold. Some of the back prospects of the mountains were extremely grand and beautiful..." Porter's read: "3rd. Went forward and got the Vista opened on a hight as far as 5½ miles from the River. Went in company with Mr. A. Ellicot and explored the country as far as the road leading from Fort McIntosh to Cayahoga. This evening being clear we made a number of observations in order to correct our meridian. Went to bed about Four in the morning."

Porter reported the party to be about seven and a half miles from the Ohio on 6 September. On the ninth he recorded an accident that must have tried the composure of a young, quite inexperienced medic. "Mr. Cross who was hurt by the falling of a tree on the 7th was buried this evening." On the tenth they "moved & encamped on the line West side of the East Branch of Little Beaver," eleven and a half miles from the Ohio River. On 11 September "Colonel Harmer[297] and Major Doughty paid us a visit." On the twelfth Rittenhouse terminated his part in the survey and returned to Philadelphia.

A solitary page among Barton's papers at the American Philosophical Society had probably been part of his *Journal* account now at the Historical Society, having been moved there by Duponceau at the founding of the latter. It may have been intended for Barton's Part Two of *New Views*, which did not come to fruition. His reference to a "sect" reflects early home atmosphere and his father's interest as a protestant missionary in going to Quebec to win the Indians from "popery." It reads:

> *The vast countries comprehended between the river Mississippi, on the East,—the shores of the Pacific and Icy Oceans, on the West and North, and the bottom of the Californian and Mexican Gulfs, on the South.—These prodigious regions are inhabited by various tribes of men, many of them existing in almost the earliest, and most insipid, form of Society; destitute of those arts; of those sciences; those inventions;—and, in some instances, even of those comforts and conveniences,—which constitute the greatest charms and happiness of Cultivated life.—These vast regions are altogether unknown to us, for they have been pervaded by a sect of men, whose views never extended far beyond the horizon of gain; or by a sect nearly equally groveling, whose sole ambition seems to have consisted in the propagation of certain tenets and opinions among the simple natives;—tenets and opinions which disgrace the most amiable and beautiful religion of the earth.*

Had this been a summary of his observations of converted Indians met with on his journey?

Notes for this period are:

> ***Friday 14 Oct.*** **[1785]** *camped about 40 perches e. of Survey line.* [Barton mentions wild geese, robins, squirrels, ground squirrels that are migratory, "good swimmers" across the Ohio, Susquehanna, Delaware,

296 Barton, Commonplace Journal, vol. 1, HSP.

297 Col. Josiah Harmar (1753-1813), b. in Philadelphia, educated at a Quaker School. He was stationed on the Ohio frontier. Edmund K. Alden in *DAB*. Major Doughty unidentified.

etc.,] *but never make boats of bark as Lapland squirrels are said to do!* [Flying squirrels are seldom seen north of the Ohio River.]

***Sat. 22 October**—Commissioners completed their meridian of 100 mi. and a few perches from sw corner of state, terminated labors for year.* [They camped about a mile to the east of the line,] *near the Cayahoga path* [where there were a number of beaver[298] nearby, a quantity of small wood, evidently Nine bark, *Spiraea opulifolia*,[299] floating.]

***Sun. 23 Oct.**—proceeded down along Cayahoga Path to Kiskushke—4 miles from next camp reached Kushkush kunk.* [They camped on the ruins of a "Moravian town" about 8 miles from Kishkushke. Here Barton entered some botanical observations.]

Mon. 24 Oct [He first saw the Virginia nightingale, the Cardinal grosbeak.[300]]

[A new page is titled "Fort McIntosh, Indian Treaty," which had been signed that January.]

***Tues. 25.** Fort McIntosh, on the west side of the Ohio, ½ mile below Big Beaver Creek. Columbian Magazine 1 (1787) has an engraving of the fort, "after a drawing which I made from the opp. side of the Ohio (here at least ¼ mi. wide).* [It was near the border in Beaver County, Pennsylvania.]

***Thursday 27th Oct.** Fort McIntosh to Fort Pitt (Pittsburgh).* [Barton intended to expand on the area, and inserted some notes later, e.g. his note on Gleditsia triacanthos, Honey locust. Between Ft. McIntosh and Pittsburgh the party crossed several branches of the Ohio River, none of much magnitude. Pittsburgh consisted of 100 houses, mostly of hewn logs, between parts "plaistered."] *Within the last 10 or 12 years it has greatly increased in size and beauty. At present (1789) it contains near two hundred houses and about fifteen hundred inhabitants.* [Cone Hill on the south side of Monongahela had Indian graves of nearly circular form. At a stop near Pittsburgh Barton made a drawing, "A view of a Swallow, or Pit, at Sinking Spring Valley, State of Pennsylvania," which appeared as the frontispiece for the October issue of Columbian Magazine [2] (1788); and "A View of Fort Robertson, in Sinking Spring Valley," in the December issue facing page 703. A tiny figure of a surveyor is in the lower right corner of the latter.]

This part of Barton's *Journal* has pages for topics he intended to write later. About the Ohio River he wrote that it is one of the worst rivers in North America for fish, with few species and few individuals, due, he says, to its distance from the Atlantic, thought to be its source. The fish, he believed, cannot readily stem the long and swift current through the Mississippi upwards, with some branches below the Ohio better supplied with fish than the Ohio. Pike, perch and catfish, were feeding on smaller species. Barton quotes Charles Soninni[301] *Travels in Upper and Lower Egypt* (London, 1800), 415, with few Nile fishes due to ravenous perch (*Perca nilotica*, now *Tilapia*). He cites John Heckewelder for *Salmo fario*; Lawson, *A New Voyage to Carolina* (London, 1709), 157, for "White guard fish," which are not the same, says Barton, as Green gar of Mark Catesby *Natural History*, vol. 2, pl. 30, as assumed by Pennant. He had intended to add accounts of the Allegheny, and "Monaungahella," but wrote only a few lines on each.

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298 [The American beaver, *Castor canadensis*, described by Kuhl, 1820. MSW.]

299 [The Ninebark is now known as *Physocarpus opulifolia* (L.) Maxim., a shrub in Rosaceae.]

300 At the time, a popular cagebird exported to England, *Cardinalis cardinalis* L., 1758, the Northern Cardinal.

301 See Wood, *Lit. Vert. Zool.*

"Monday 31st." Barton "set out from Pittsburgh, in company with two gentlemen," and the next day visited Turtle Run. The Soft-shelled turtle, with its remarkably pliant shell with short spines on its forward edge, Barton conjectured to be in the Ohio River, and he devoted a half page to it. Johann David Schoepf (1752–1800), surgeon to the Ansbach troops during the American Revolution, was to leave an important commentary on his travels, generally including zoological notes.[302] Barton acquired a copy of Schoepf's *Reise*[303] sometime later. Schoepf had heard reports of the turtle in the Ohio River, but this northern counterpart of the Soft-shell turtle that William Bartram described and illustrated in his *Travels* was not distinguished until Lesueur named *Trionyx spiniferus.*[304] Bartram's southeastern Soft-shelled turtle had first been noticed by Thomas Pennant in 1771 from Alexander Garden's record of Charleston. During Barton's lifetime this was known as *Testudo ferox.*

Barton had intimations of a kind of salamander, but then included the word lizard. After the title "Lacerta"[305] he left a half page blank: "the animals of which I am speaking is a species of lizard which has not hitherto been described by any naturalist." After a blank next half page: "It has been observed about the headwaters of the west-branch of the river Susquehannah," a comment added at a later time. Barton's story of what herpetologists today know as *Cryptobranchus alleganiensis*, and by the hill folk as Hellbender, is told in another place, but the beginnings appeared in this survey trip of 1785.

Birds. Two and a half pages, obviously inserted after publication of his *Fragments* (1799), since he refers to it. "I. Most of the birds which delight to dwell in the cultivated country and in the neighborhoods of man, are more common in the Atlantic or eastern, than in the western parts of the country."

Fish. Six pages are devoted, though with gaps. He mentions a Mr. Billie, Mr. Wilson, and his own observations on "Little Miami River." He quotes John Bartram from a "Manuscript Journal in my possession," and from John Heckewelder and Col. Andrew Porter, these certainly later additions by Barton. The huge specimens they were seeing would make Buffon think twice. He was refuting Buffon's disparagement of the animals of America.

After five blank sheets he entered:

> *Turtle Run General Braddock* [Braddock's Field, Pennsylvania]. *Tuesday, November the First...Came to Brushy-Run, General Boguet* [Bouquet's Field], *Hannah's Town, Trial of an Indian for Murder, Vegetable. Ten miles farther is Hannah's Town...of very mean appearance. It is, at present (1789) more respectable. In our ride today, we crossed Chestnut Ridge. This is the most westerly ridge of the great Alleghaney Mountains in this part of the country...*
>
> [Next page:] *In the evening put up at the house of one Telfies* [or Tessies]. [He was now in Westmoreland County. Regarding "Lawell-Hannek" he wrote on] *Wednesday 2d. Proceeded on my journey, in the morning. Crossed Loyal Hannon-waters, and near Ligonier, the main creek. The Delaware name, of which Loyal Hannon was a corruption, is Lawell Hanneck, which signifies the middle branch. It is a branch of Kiskhemenetas.* [Here Barton demonstrated his developing lifelong interest in Indian languages. Loyal Hannon has now become Loyal Hannah, a town near Latrobe. This is the end of his *Journal* entries.

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302 Adler, *Early Herp.*, 14–15, portr.; Schoepf, *Travels*, 249. Schoepf described Bartram's turtle as *Testudo (ferox?) verrucosa Bartrami* in his *Historia Testudinum* (Erlangen, 1792), 90–91.

303 *Reise durch einige der mittlern und südlichen Vereinigten Nordamerikanischen Staaten* (Erlangen, 1788, 2 vols.).

304 [These names refer today to *Apalone spinifera* Lesueur, 1827, for the Spiny Softshell Turtle, and *Apalone mutica* Lesueur, 1827, for the Smooth Softshell Turtle. RA.]

305 Lizard, in Latin is *lacerta, lacertae* being the plural.

Barton probably stopped in Lancaster for a visit with his sister Esther, and brothers Matthias, David, and Thomas before proceeding on to Philadelphia.]

Back in Philadelphia he showed his lifelong devotion to the printed page in his articles and illustrations contributed to *Columbian Magazine*. Besides those referred to earlier was "A description of Juniatta River in the State of Pennsylvania (Embellished by an elegant engraving)" the article signed "B." The engraving was used as the frontispiece for August.[306] There followed "A description of Bald Eagle Valley, its natural curiosities, mines, springs, etc. accompanied with an elegant drawing," signed "B."[307] Also signed "B." were "Some account of the American Philosophical Society held at Philadelphia, for the Promotion of Useful Knowledge,"[308] and "On the pronounciation of Latin,"[309] here another example of his interest in languages. He compared the derivation of words, language to language, Latin, Teutonic, and German.

During the spring, while making plans for study in Edinburgh, Barton also submitted several other articles to *Columbian Magazine, or Monthly Miscellany, Containing a View of the History, Literature, Manners and Characters of the Year*. This short lived predecessor of *Universal Asylum and Columbia Magazine*, then of *American Museum* (1792), was founded by Matthew Carey; James Trenchard, who engraved two copper-plates for each number of the three volumes and became sole owner for the year 1789; Charles Cist (1738–1805), printer and publisher, born in Russia, who later established a government printing office; William Spottswood, bookseller and manager; and Alexander T. Dallas, editor from 1786–1792.[310] Two articles appeared under the name "Philo-Naturae," but whether Barton wrote the articles, or his articles were recomposed by the editors, is not certain. The prose is more direct than Barton's usual: "Natural History of the locust of North America"[311] has detail quoted from the new American imprint of *Encyclopedia Britannica* and a reference to Linnaeus. The second article, "Thoughts on Crotalus horridus,"[312] signed "Philo-Naturae" is "probably by Barton," teste William McAtee. This reports that a gentleman of some knowledge in natural history, "having made an excursion into the back country," saw several snakes and showed "Philo-naturae" the rattles, stating that each "fibulae" represented a year, which "Philo-Naturae" denied.[313] He hopes some "ingenious naturalist" will take up the subject of the natural history of the *Crotalus*. If really Barton's article, this may have been a device for creating interest in a future publication and a self stimulus to the young naturalist.

So far as we have learned, it was not until much later that contributors to journals were recompensed. It may have been, however, that to launch the new magazine successfully the editors contributed a mite to the aspiring medical student who was able to furnish them with competent illustrations for engravings. Fired with ambitions for further publications, Barton took with him to Edinburgh and London his notes on Indians, publishing in 1787 only a small part in his *Observations*, and the discourse on the Indians that he delivered before the Edinburgh Speculative Society in 1788.[314] Over a decade later he wrote his estimate of what the summer had meant for him: "A fondness for natural history in all its branches, early induced me to visit & examine some of the less explored part of our country. In the year 1785, whilst I

306 *Columbian Mag.* [2] (1788): 417–418.

307 *Columbian Mag.* 2 (1788): 480–492. Engraving used as frontispiece to the volume.

308 *Columbian Mag.* 3 (1789) Pt. 2: 703–706, 763–766.

309 *Columbian Mag.* 3 (1789): 717–718.

310 The history of *Columbian Magazine* is sketchy. See Winterich, *Printing*, passim.

311 *Columbian Mag.* 1 (1787): 86–90.

312 *Columbian Mag.* 3 (1789).

313 Klauber, *Rattlesnakes*, 1: 254, reports no validity for the growth-age corollary.

314 Speculative Society, noticed by William Smellie as a "trifling Club" in an undated letter, was still active in 1811 (Kerr, *Memoirs of Smellie*, 1: 156).

was a student of medicine, & only 17 years of age, I visited part of the country beyond the Allegheny mountains, in the company of several intelligent men; among whom I may mention my excellent relative David Rittenhouse. I spent the whole of the summer & autumn of this year examining the production of the country through [which] I passed & in making drawings of many of the rarer plants."[315]

Over the years, these notes, along with those he accumulated on other trips, his gleanings from William Bartram, family members, and many correspondents, went into articles he contributed to Pinkerton's *Modern Geography* (Philadelphia, 1804), his *New Views*, *Elements*, and *Philadelphia Medical and Physical Journal*, and more. His ambitions for a flora of the country, a zoology, and a geography were not to be. Although this journey had fired his hopes and ambitions to become the nation's leading naturalist, medicine must be his economic base until, and unless, he could find a patron to support his researches. This he did not find. His "Notes on the Animals of North America," sent to Thomas Pennant in 1793, based on observations made during this western journey, arrived too late for Pennant's publication. These notes have been edited with an introduction by Keir B. Sterling.[316]

315 Ms. vol. 22 "Notes on a tour through New York State," Barton papers, APS.

316 Sterling, *Barton's Notes*.

Chapter III

Edinburgh: Mecca for American Pupils

"Such duskey grandeur clothed the height; Where the huge Castle holds its state; And at steep slope down; Whose ridgy back heaves to the sky; Piled deep and mossy, close and Mine own romantic town!"
—Sir Walter Scott, *Marmion*, Canto IV

After his return from the surveying expedition to the West, Barton visited his old fr William Bartram for a long discussion of what he had experienced. He urged Bartram to into print his journal of his travels to the South, to him a fascinating document. He prob returned to the college, but he longed for a degree from the University of Edinburgh, wher professors, Rush, Shippen, and Wistar, all had attained theirs. Shippen may have ad impetus to Barton's desires, if he counseled him in the same frame as he wrote to an En friend, concerning his own son's education,

> *My son has had his education in the best college in this part of the country, and has been studying physic with me, besides which he has the opportunity of seeing the practice of every gentleman of note in our city. But for want of that variety of operations and those frequent dissections which are common in older countries, I must send him to Europe.*[317]

Although some pupils went to London especially to study anatomy with Dr. John Hu Edinburgh was a more friendly place, especially after the War for Independence, and so r popular. Even so, many medical pupils spent the winters or the two months between term London, where they might attend Hunter's anatomical lectures and private dissections or n enroll as pupils at Guy's Hospital. Fewer American pupils went to Leiden except for brief v because of the language difficulties, even though most of the lectures were delivered in L Barton quite naturally chose Edinburgh, the alma mater of leading Philadelphia physic Orphaned and penniless, he was aided with loans from his brother William, and Drs. Mor Shippen, Rush, Wistar, and Physick. David Rittenhouse may have contributed, although a this time he had the families of his two daughters living with him.

Such assistance was in tradition. Franklin had contributed to the European educatio Rush and Morgan,[318] the first two Americans to win medical degrees at Edinburgh, Reverend Thomas Barton had aided Morgan, who was reciprocating by contributing to ye Barton's trip. Franklin had sent Morgan to Dr. John Fothergill, on whose advice he undertook practical work before proceeding to Edinburgh. Fothergill loaned Morgan amount of fees for his election to the Royal Society of London. On his return, Morgan instrumental in establishing the medical school and held the first Chair in the Practic Medicine at the College of Philadelphia, Shippen the first chair in surgery and midwifery.[319]

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317 Bell, "Medical Students," 4.

318 Bell, "Medical Students," 5.

319 Carson, *History*, 44–48; Corner, *Two Centuries*, passim; Bell, *Morgan*.

Barton sailed from Philadelphia 23 June 1786. Thomas Parke, in a letter to Humphry Marshall on 18 June, mentions the trip.[320] Upon landing in London, Barton visited the aging Dr. John Hunter (1728-1793), Scottish anatomist and surgeon.[321] He had studied under his equally famous brother, Dr. William Hunter (1718-1783), who had apprenticed under William Cullen, then had gone on to obtain his M.D. at the University of Edinburgh before setting up practice in London. Since John Hunter had attended neither university nor medical school, he found that for recognition he needed more than his own researches, and so in 1768 he gained a diploma from the Company of Surgeons and joined the staff of St. George's Hospital. His practice, like his brother's, was "large, lucrative, and illustrious." He became Surgeon-General in 1790. Hunter advised his pupils to study the human body rather than the textbooks describing it. He had returned in early October to Leicester Square after four weeks at Bath with his wife Anne, having "taken the waters," in hope of relief from his gout and angina, when he met the young American. He reported Barton's visit to Cullen in Edinburgh:

> *8 October 1785* [1786]
>
> *Dear Sir, It gives me great pleasure to have an opportunity to write to you more especially when it is connected with that line in which you are so greatly esteemed. The bearer Mr. Barton is recommended to you as a very deserving young man and wished to have a letter of introduction to some of the professors in Edinburgh. You will be so good as to put him in the best way to pursue his studdies and also to recommend him to Dr. Black with my Complts...Long may you live and keep your health for I tremble for Edinburgh when you disist from giving her your assistance.*
>
> *I am, Dear Sir, with great esteem,*
> *Your most affectionate and Humble Servant.*
> *John Hunter*[322]

The University of Edinburgh had developed a reputation for medical teaching from the time of Alexander Monro, *primus* anatomist in the University from 1720 until 1758, and carried down to William Cullen (1710-1790) and his contemporaries. Thomas Jefferson, writing from Paris in 1789, declared that where science was concerned "no place in the world can pretend to a competition with Edinburgh."[323] From the time of the death of Samuel Johnson in 1784 until that of Sir Walter Scott in 1832, "Edinburgh rather than London was the intellectual centre of the kingdom."[324] Caspar Wistar described the city to Rush while he was a student in 1785: "It was composed of not only decent but even elegant houses. You remember the Valley in the North of this Town was not builded; over this a large Bridge has been [formed] which I think is equal in beauty & height to London Bridge, & exceeds it in convenience for it is flat on the surface. In the fields opposite the town they have erected a new Town which may be compared even with Bath."[325] Wistar suggested that progress had been due to a change in the manners of the people rather than an increase in population.

Before Barton sailed from Philadelphia for medical school, he had solicited two letters of introduction to Dr. William Cullen, one from Dr. John Morgan and one from Dr. Benjamin Rush. The letter from Barton to Rush, who was visiting "Prince Town," New Jersey, read:

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320 Darlington, *Memorials*, 529.

321 *DNB*; Jessie Dobson in *DSB* on both John and William Hunter.

322 Cullen correspondence, Royal College of Physicians, Edinburgh; on Cullen, *DNB*; with special emphasis on his chemical rather than his medical career, Wm. P. D. Wight in *DSB*.

323 Young, *Edinburgh*, 10; J. B. Morell, "University of Edinburgh in late 18th Century," *Isis* 42 (1971): 158-171.

324 R. S. Rait in William Thomson Fyfe, *Edinburgh under Sir Walter Scott* (London, 1906).

325 Rush, Letters, 27: 123, HSP. Also see Robert Heron, *Scotland Delineated...* (Edinburgh, 1799; reprint Edinburgh, 1975), 346, describing the city, the University, 354-355.

Dear Sir, I am very sorry to trouble you in your retirement from the city were it not that I am obliged so to do. I shall sail for London on Sunday next, and as you were so polite to promise me letters recommending me to some of the Professors &c in Edinburg, I shall esteem it a very particular favour if you will transmit them to Philadelphia as soon as possible.—Pardon this intrusion, and believe me to be with the greatest sincerity

Your friend and pupil, B. Smith Barton

Philadelphia, June 12, 1786[326]

Rush obliged:

Dear Sir,

The bearer, Mr. Benjn. Barton, has studied physic for several years in our University with industry and success. The relish we have given him for your discoveries has determined him to pursue the stream to its fountain in Edinburgh. He wishes moreover to graduate in your University, where (unfortunately for the other universities in the world) degrees have a kind of exclusive pre-eminence. It would confer a singular favor upon Mr. Barton if you would admit him to the honors of the College after one year's residence. His class will be admitted to degrees this year in our University, and nothing but his preference of a diploma from Edin[burgh to] *one from us prevented his sharing with them in the honors of the University of Pennsylvania.*

Mr. Barton is the nephew of the celebrated Mr. Rittenhouse, our great American astronomer, and possesses such abilities, joined with a thirst for knowledge, as render him worthy of that connection.

With great respect I have the honor to be, dear sir, your affectionate pupil and most humble servant, Benjn Rush[327]

The letter from Dr. John Morgan, Philadelphia, to Cullen, dated 14 June 1786, read:

Dear Sir: Mr. Barton the Bearer of this letter is the son of my worthy Friend, the Rev'd Mr. Barton of Lancaster in Pennsylvania, a Young Gentleman whom I respect both for his own Sake & that of his Friends. Being on the point of Departure for Edinburgh to finish his Studies in Physick in that justly celebrated University of that City, I beg leave to recommend him to Your Notice. I flatter myself that his attention to the business he goes over upon will be adequate to the warm Wishes & expectations of his friends, from his enjoying the Benefit of Your Lectures. Your old friend Dr. Franklin fills that chair of President of the State of Pennsylvania to the great Satisfaction of its Inhabitants and is blessed with his usual Health & Spirits. I hope you will long continue the ornament of our Profession. Wishing Yourself & family every felicity, I remain Your very affectionate Friend & Servant. John Morgan.[328]

Shippen's letter had been addressed to John Hunter, anatomist in London. Barton also approached Dr. Thomas Parke[329] to secure seeds from the nurseryman Humphry Marshall[330] to present as homage to the Scottish botanist, Dr. John Hope (1725–1786). In particular he desired seeds of *Franklinia*, [the rare Franklin Tree, *F. alatahama* Bartram] which had been

326 Rush, Letters, 27: 1, HSP.

327 Butterfield, *Rush*, 1: 392–393.

328 Cullen, Correspondence, 13 (1796), Royal College of Physicians, Edinburgh.

329 On Thomas Parke (1749–1835), who studied in London and Edinburgh, 1771–1772, Bell, "Parke."

330 Humphry Marshall, Correspondence, 1: 28, HSP. A recent biography, Morton, *Hope*.

importantly announced in Marshall's *Arbustum Americanum* the year before.[331] When he arrived in Edinburgh, it was with memories of gardens at home, especially Bartrams' of natives, and Hamilton's outdoor plantings and beloved "stove" at the "Woodlands," notable for its exotics. Barton was therefore pleased with Dr. Hope's flourishing botanic garden associated with the medical school. Thomas Pennant had described it as he had seen it in 1769:

> *At a small walk's distance from Calton Hill, lies the new botanic garden,* [on Leithwalk] *consisting of five acres of ground, a green-house fifty feet long, two temperate rooms, each twelve feet, and two stoves, each twenty-eight: the ground rises to the north, and defends the plants from the cold winds: the soil a light sand, with a black earth on the surface. It is finely stocked with plants, whose arrangement and cultivation do much credit to my worthy friend Dr. Hope, Professor of Botany, who planned and executed the whole. It was begun in 1764, being founded by the munificence of his present Majesty, who granted fifteen hundred pounds for that purpose.*[332]

Benjamin Rush had received his degree of Doctor of Medicine in 1768, the year before having attended Dr. Hope's materia medica classes during his second winter. Unfortunately Hope died on 10 November 1786. Barton knew him only from likenesses and tradition, and so Hope's enthusiasm for plants, which had delighted Adam Kuhn, James Edward Smith, and others before him, survived in the botanic garden.

Hope's undergraduate teacher had been Charles Alston, who began his medical studies at Glasgow when thirty years old, then entered Leiden where Dr. Herman Boerhaave was professor and where Alexander Monro *primus* was also a student. Alston's important university career began in 1739 with botanical teaching and management of the botanic garden, where he was to continue for twenty-two years. Alston had been "nurtured from his early years in the system of Tournefort, Ray and Boerhaave,"[333] and he especially supported the plant classification proposed by Joseph Pitton de Tournefort, who emphasized relationship through the conformation of the flower as a whole rather than by the arbitrary number of stamens and pistils. Alston encouraged field collecting and offered a gold medal each year for the best *hortus siccus* turned in by a student. Alston, an opponent of Linnaeus's system, was succeeded by Hope, who firmly adopted Linnaean classification.

John Hope, son of Edinburgh physician Robert Hope, in his enthusiasm for plants, had taken time out from his medical studies to pursue botany in Paris under Antoine Laurent de Jussieu. Jussieu was then grouping and regrouping plants in the Royal Gardens under the Linnaean scheme in a search for the closest affinities, and so Hope found himself questioning the instruction he had received from Alston. Hope became the apologist for Linnaeus in Scotland. More important, however, was the attention he paid to plant physiology, to such topics as translocation of water and nutrients, tropisms, and what came to be called the biology of the flower. During the winter months Hope taught materia medica at the University, turning to botany five days a week during May, June, and July. In 1768 the two courses were separated, and Dr. Frances Home was appointed to the new Chair in Materia Medica. Hope had succeeded in 1763 in moving the garden collection from the Trinity and Holyrood gardens, suffering with fumes of the old coal burning city, to Leigh Walk.

On Barton's arrival in Edinburgh, the botanic garden covered some five acres, where Haddington Place stands today. There was a pond, an arboretum, and a conservatory with, among unusual plants, a Far Eastern *Illicium*, a companion to the two Anisetree species of the southeastern United States, the *Illicium floridanum* and the yellow-flowered *Illicium*

331 Letters between John Hope and John Bartram, Darlington, *Memorials*, 432–436.

332 Pennant, *Tour*.

333 Isaac Bayley in Oliver, *Makers*, 286–290.

parviflorum, which the Bartrams had discovered and which William had collected, drawn, and would soon publish. John sent Hope seeds of *I. floridanum*. Hope requested other items; for example, he wrote "I should be particularly fond of having the seeds of the Lobelia siphilitica."[334] Phenology was another of Hope's botanical interests as shown by his manuscript "Calendarium flora of Edinburgh" with interpolated comments. It is preserved at the Royal Botanic Garden, Edinburgh. Such was the botanical background of the University that awaited young Barton.

While Barton was at Edinburgh, Malcom McCoig was Principal Gardener. McCoig had proposed a local flora, to be supported by subscription, and to be printed by William Smellie. It failed to materialize, probably for insufficient subscribers. Perhaps an impediment, too, was Smellie's involvement with his own *Philosophy of Natural History* (London & Edinburgh, 1790–1799, 2 vols.), after McCoig's death.

Dr. Hope's influence on one pupil's career was decisive: James Edward Smith[335] of Norwich absorbed Hope's enthusiasm for the Linnaean system and in turn lived to Anglicize Linnaeus for all time. Smith's father, a wealthy non-conformist (Unitarian) wool merchant, operated a drapers' shop in the same building where James Edward was born 2 February 1759, the eldest of seven children, his father's heir. His mother, Frances Kinderley Smith, was a curate's daughter, and from her James Edward is said to have inherited his love of plants. At twenty-two, Smith went to Edinburgh, studied under Hope, won a gold medal, founded a natural history society there, but did not take a degree. What led to Smith's disenchantment with medicine at Edinburgh is not easily traced. "I nearly believe medicine, if it deserves the name of science at all in its present state, is in the most barbarous condition of any Science, and only now emerging from the greatest darkness and absurdity." Theory now seemed to Smith to be going into disrepute; experience "was everything." He was happy to have attended Thomas Browne's lectures: they were gaining ground but "perhaps," he added, even Browne "may have only his day."[336]

Smith left Edinburgh for London in 1783 with a letter of introduction to Joseph Banks. There he studied under Doctors John Hunter and William Pitcairn. It was that same year that Linnaeus *filius* died, and acting upon the suggestion of Banks, Smith purchased the Linnaean *reliquiae*. He moved to Paradise Row in Chelsea near the Physick Garden with his burden of glory, the natural history collections and library of Linnaeus. While at Leiden during his grand tour of Europe, 23 June 1786 to autumn 1787, he received his M.D. degree, his thesis a translation from Linnaeus's Latin, published as *A Dissertation on the Sexes of Plants* (London, 1786), which he dedicated to Hope. Although Smith describes the anatomical theatre at Leiden and mentions the physicians Sandifort and Van der Wynperse whom he met there, he does not mention his being awarded the M.D. degree.[337] After his return from the Continent, he moved with his treasures to Great Marlborough Street, where Barton surely visited him in the autumn of 1788.

The Natural History Society that James Edward Smith founded at Edinburgh met every Friday night from four until nine, when two papers were presented and discussed, the members taking turns in presentation.[338] About twelve people attended. Dr. Hope was an honorary member, although he could attend meetings only occasionally. The geologist Hutton, of "greatest good humour," was "very communicative, very clear, and of a candid though quick

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334 [*Lobelia siphilitica* L., the Great Blue Lobelia. IPNI. ITIS.]

335 Diana M. Simpkins in *DSB*.

336 Smith, *Correspondence*, 1: 66.

337 Smith, *Tour* 1: 15–16.

338 William Thornton of Tortola had been elected the first president of the society in April 1783; Caspar Wistar in December 1785; and Barton in December 1786. Other society associates of Barton included Samuel L. Mitchill of New York, Thomas Mann Randolph of Virginia, James Moultrie of Charlestown, and Solomon de Leon of St. Kitts. Allen, "Edinburgh," 490, and University of Edinburgh, Archives. For Thornton, see Charles M. Harris et al., eds., *Papers of William Thornton* (Charlottesville, Va., 1995).

temper: in short, Smith was quite charmed with him."[339] Dr. John Walker attended regularly, and the chemist, Dr. Joseph Black, was also a member. Of his mentor, Dr. Hope, Smith wrote that the more he saw him "the more I adore him" and "I admire his botanical lectures; his delivery is aggreeable, with as many 'behoves' as Dr. Walker."[340] Smith's interest in classification of willows inspired him to collect and grow "all available kinds," an eighteenth century instance of what we now recognize as the analog of "experimental taxonomy." In his inaugural address, delivered 8 April 1788 on the founding of the Linnean Society in London, entitled "Introductory discourse on the rise and progress of natural history," Smith gave slight notice to America, even claiming British citizenship for her best-known "natural botanist," John Bartram. He spoke of the late celebrated Philip Miller at the Chelsea Physick Garden, and of his progress in horticulture, then added inaccurately that "Bartram was sent to America for the purpose of supplying our gardens with plants, and we are much indebted to him."[341]

When "James Edward Smith, M.D., F.R.S., President of the Linnean Society" was elected an honorary member of the American Philosophical Society on 15 January 1796, Barton was one of the eighteen members present. When Barton published his *Collections for Materia Medica* in 1798, he dedicated it to Smith, remarking that he admired his "exertions for the extension of that amiable science which both of us cultivate: you with the happiest success; I with an humble ardour." Barton closed his two-page dedication with the hope that if he succeeded in convincing Dr. Smith "that there are some lovers and cultivators of botany in the United States, one of my objects in writing this dedication will be accomplished." Could this have been an apostrophe to Smith's scant reckoning of American natural history ten years earlier? Smith responded to the dedication by sending Barton an inscribed copy of his *Tracts Relating to Natural History* (London, 1798).

In London in 1821, William Cooper had "about 20 minutes conversation with [the aging J. E. Smith] while he was waiting for the carriage." Smith told Cooper that Dr. Bigelow "had greatly tantalized him in his account of his excursion to the White Hills [White Mts.] by speaking of 'umbilicated lichens.'" Cooper said Smith "appears to be about 60 [he was 62], middle size, rather corpulent and round shouldered. The busts & portraits I have seen do not give a good idea of his countenance. He has a heavy, rather a sleepy look, & very fat about the lower part of his face and under the chin. [Robert] Brown is I believe considered the greater Botanist."[342]

In the preface to his *Discourse* Barton informed his listeners and readers that he had "never attended any lectures, however imperfect, on the Natural History of Botany." Because he was ill in the summer of 1786 shortly after his arrival in Edinburgh, he had not been able to attend Dr. Daniel Rutherford's class. Although Rutherford, who had obtained his M.D. degree at Edinburgh in 1772, was Regius Keeper of the Botanic Garden from 1786 until his death in 1819, his pupils gained their field experience from their own trips to gardens and moors. Under his aegis, though undoubtedly Hope's, *Characteres Generum Plantarum* (Edinburgh, 1793) was issued anonymously.[343] Rutherford was, however, better known as the chemist who discovered nitrogen gas. His ambition had been to succeed to the Chair of Chemistry; instead he was appointed to the Chair of Botany. It is said that he always seemed to lecture with a grudge, although he was "clear" and "full of condensed information."[344] "From the manuscript notes of his lectures, I gather," wrote Professor Balfour, "that the biological did not attract Rutherford,

339 Smith, *Correspondence* 1: 45-46.

340 Smith, *Correspondence* 1: 77; Taylor, "Walker," 182.

341 Smith's "Discourse" was published in *Trans. Linn. Soc. London* 1 (1791), the reference to Bartram on p. 37.

342 Wm. Cooper, London, 24 July 1821, to John Torrey. Torrey Correspondence, NYBG. Robert Brown (1773-1858), botanist with Flinders, returning from Australia in 1805. He succeeded Dryander as Banks's librarian and became first Keeper of Botany in the British Museum, where he "sat spiderlike at the centre of the botanical web." A recent work, D. J. Mabberley, *Jupiter Botanicus, Robert Brown of the British Museum* (Braunschweig, Germany, 1985).

343 Henrey, *Literature before 1800*, 2: 201, explains its intricate history.

344 Christison, *Life* 1: 54-55.

nor does it appear in the scanty records available that any special development of teaching equipment or of method took place during his tenure in office."[345] Suffering from gout, he conducted no field excursions, depending wholly on specimens supplied to him by the patient William MacNab,[346] head gardener. One day in class he demonstrated the effect of the ill odor of henbane on himself. With mock choking he shouted "take it away, Mr. M'Nab, take it away!" Can it have been a fellow student's account of the spectacle that led to Barton's choosing the plant for his special investigation? Was Rutherford one of the professors who had disappointed Barton with his "reprehensible conduct"?[347] Had he decided that a botany course with no professor along in the field was too incomplete to take time for? He went off to London to recuperate, as he wrote Rush, from his illness.

Barton was denied the benefits of "the honored and respected friend" of physicians and botanists, the teaching and counseling of Dr. Hope, who was ailing and died in November, the year of his arrival. Dr. Andrew Duncan, the elder, then forty-two, professor of the Institutes of Medicine, soon knew of Barton's arrival. "During a pretty long life," Duncan reflected, "it has been my lot to have had opportunities of visiting gardens in three different quarters of the globe, in Europe, in Asia, and in Africa." Each Sunday evening from six to eight the doctor gave a tea-drinking party to about a dozen pupils in his classes by rotation. He is said to have popularized sea-bathing at Leith and when past eighty to have "washed his face in the dew of the summit" of Arthur's Seat on the first of May every year, poetizing to mark the event. Duncan was disappointed that the younger generation of his friends preferred "the notes of a fiddle, flute or organ in a drawing room to music of the linnet, thrush, or the goldfinch in the fields."[348] He pioneered in the humane treatment of lunatics in public asylums, greatly influencing Benjamin Rush's attitudes in Philadelphia practice. Duncan presided over the Caledonian Horticultural Society, "which bred a famous race of Scotch gardeners." Like Hope, Duncan fathered a succession at the University. His son of the same name, born in 1773 and dying in 1832, four years after his father, held the chair of medical jurisprudence. He has been noticed for his identification of the chemical structure of *Cinchona*.[349]

For geology, the most significant influence on Barton was John Playfair (1748–1819),[350] Professor of Mathematics from 1785 and from 1805 of Natural Philosophy at the University, though he earlier had been a minister. An early member of the Royal Society of Edinburgh, he well knew American members. He was a protagonist of James Hutton (1726–1797)[351] and his *Theory of the Earth with Proof and Illustrations* (Edinburgh & London, 1795, 2 vols.), which had originally been read to the Society in 1785, not so much for detail of the Earth's history as for Hutton's extended view: "we find no vestige of a beginning,—no prospect of an end." Barton was impressed with the uniformitarianism that Hutton, and following him, Playfair, supported. The flow of acceptance of this view in America was as slow as the molten rocks themselves, but the incidental references in Barton's lecturing were of course not to potential geologists, but to medical students. Barton's considerable attention to mineralogy—admittedly mostly as a cabinet collector—included, conglomerate-like, comment on the origins of rocks. Neither William

345 Isaac Balfour in Oliver, *Makers*, 291.

346 William MacNab (1780–1848), native of Ayrshire, fathered Catherine Mary, author; James (1810–1878), who visited the Atlantic states and Canada in 1834; and Gilbert, who went to Jamaica in 1838 to live. All were devoted to botany. Andrew Murray, who collected the type of *Cupressus macnabiana* in California, named the cypress for James.

347 W. P. C. Barton, "Barton," 17.

348 George Thomas Bettany, *Eminent Doctors: their lives and their work*, ed. 2 (London, 1885) a: 86.

349 Young, *Edinburgh*, 82. However, P. J. Pellitier and J. H. Coventou are credited with the isolation of quinine in 1820 in Morton, *Medical Bibliography*, no. 5233. Hope's son, Thomas Charles Hope, born the same year as Barton, became professor of chemistry and discoverer of strontium, which commemorates the smelting house of Argyll on Loch Stuart (*DSB*).

350 George W. White, "Biography of Playfair," pp. xv–xviii in John Playfair, *Illustrations of the Huttonian Theory of the Earth* (New York, 1964); John Challinor in *DSB*; Barnard B. Woodward in *DNB*.

351 V. A. Eyles in *DSB*.

Maclure, who knew the Philadelphia scene intimately from 1796 and intermittently to 1824, nor Amos Eaton, a student of Eli Ives, who in turn had listened to Barton's lectures, noticed Hutton's or Playfair's works in their writings. One of the last gestures of appreciation that Barton was to make before leaving Edinburgh was to inscribe (Figure 15) a copy of his *Observations* to "Dr. Playfair [who] will greatly honour the author by accepting this little trifle September 3d, 1788."[352]

Another of Barton's professors was Dr. Joseph Black (1728–1799), Cullen's successor as Professor of Chemistry, born in Bordeaux, the son of a Scottish wine merchant in France. His neighbor Henry Cockburn remembered him as "a striking and beautiful person; tall, very thin, and cadaverously pale; his hair carefully powdered, though there was little of it except what was collected into a long thin queue; his eyes dark, clear, and large, like deep pools of pure water." Cockburn continued, "he wore black speckless clothes, silk stockings, silver buckles, and either a slim green silk umbrella or a genteel brown cane. The general frame and air was feeble and slender." Cockburn also remembered that "the wildest boy respected Black...he glided, like a spirit, through our mischievous sportiveness, unharmed."[353] Black financed James Watt's experiments with steam engines. He was a friend of James Hutton, their friendship "indeed a distinguishing circumstance in the life and character of both...[their] similarity of disposition...and that degree of diversity to give to friends the highest relish for the society of one another."[354] A testimonial of Black's imprint on three American students, one of whom was Barton, is the letter by Matthew Carey endorsing for publication an American edition of Black's *Chemistry,* from manuscript lecture notes, after Black's death.[355]

"My very respectable and learned friend, Dr. John Walker, Professor of Natural History at the University of Edinburgh," as Barton referred to him in his *Fragments*, 16, was his greatest University influence in zoology. The topics that Barton pursued back home in Pennsylvania were often topics that Walker had considered in his lectures. A comparison of the notes of another of Walker's students (Walker left none of his own) concerning the fascinating powers of serpents shows that Barton followed much the same approach, although he refuted the idea of charming.

John Walker (1731–1803), born in Edinburgh, was reading Homer, presumably in Greek, at the age of ten, we are told, and read again and again James Sutherland's account of the local flora, *Hortus Medicus Edinburgensis* (Edinburgh, 1683). He was, in short, a studious lad. At fifteen he began collecting minerals, with botany and geology holding his energies through a lifetime. For twenty-four years he taught geology at the University, although he had entered to prepare for the ministry—he was ordained in 1758—in the course of his studies he fell under the spell of William Cullen's chemistry lectures. The local natural history museum (Weir's) "as respectable as any University in Europe could at that time boast of...it was the view of it which first inspired [him] with a taste for Natural History,"[356] and led Walker eventually to purchase it (Figure 14).

The range of his disciples is impressive. Geologists John Playfair, James Hall, and Robert Jameson, who succeeded Walker, were pupils in his classes. Jameson was crowned "father of Scottish mineralogy," and as for his geological teaching "though some of his concepts were false, he represented the beginning of a new age in geology."[357] Botanists James Edward Smith of London, and Robert Brown of Aberdeen were also his students. "Although Walker's botanical

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352 This copy in Ewan Library, MBG.

353 Cockburn, *Memorials*, 55.

354 On p. 112 of J. Playfair's "Biographical Account of the Late Dr. James Hutton" *Trans. Roy. Soc. Edinburgh* 5 (1803: 39–99, as reprinted in *The Works of John Playfair* (Edinburgh, 1822, 4 vols.), 33–118.

355 Joseph Black, Lectures on the Elements of Chemistry, delivered at the University of Edinburgh (Edinburgh, 1803). Smith, Old Chemistries, 78–93, portr. of Black.

356 Scott, *Walker*, xviii, with a 29 page-long biographical sketch; Harold W. Scott in *DSB*.

357 Scott, *Walker*, xliv.

observations are now practically ignored, he was regarded as an authority on agricultural and arboricultural matters, and on these subjects was extensively quoted by contemporary writers."[358]

The zoologist and founder of *Medical repository* in New York, Samuel Latham Mitchill, a student in 1785 and 1786, and Barton as well, enrolled in Walker's courses in natural history. Irony it is that the recent *Dictionary of Scottish History*[359] fails to include this "notable Scottish naturalist."

Walker's private mineral and rock collection of over three thousand specimens representing fifteen hundred kinds was "probably exceeded by none in the latter half of the eighteenth century with the possible exception of Werner's in Germany."[360] The dolomite from Niagara Falls and the fossil ferns from Pennsylvania, mentioned as once in Walker's collection,[361] may possibly have been sent by Barton after his visit to Niagara Falls in 1797, although they may have come by way of Mitchill, who is also known to have had a keen interest in minerals.[362] Within the environs of Edinburgh, "many beautiful variegated stones of the jasper kind" might be found.[363] Barton dated a memorandum "May 10, 1788, Brickfeild," which he had transcribed "but not verbatim" from Mr. Wm. Jameson's copy of Dr. Walker's mineralogical notes on "Sideropoecilon or Whin Rock."

Walker's lectures were enlivened by his references to recent events and publications. The several transcripts of lectures made by different students, preserved in the Edinburgh University archives, show that Walker updated his lectures. Barton learned such botanical news as that "two Spanish Gentlemen," Ruiz and Pavón, were lately arrived from Peru, John Sibthorp from the Levant with "2000 species of plants," and that John Fraser had advertised a field grass, a chicane importation from South Carolina, as highly profitable and named it *Agrostis cornucopiae*! Walker had evidently heard that those who had paid two guineas the English gallon for the Fraser grass had been hoodwinked.[364] Charles Stewart, printer, secretary of the Natural History Society, and later elected an associate Fellow of the Linnean Society, had been a student in Walker's class of 1782. Stewart's lecture notes, which are preserved in the University Library, were the basis of his *Elements of the Natural History of the Animal Kingdom* (Edinburgh, 1817), published after Walker's death.[365]

To know the man, inspect his library. The range of John Walker's natural history interests was reflected in the books he owned. An invoice presented to "Rev. Doctor Walker, minister at Moffatt," by the bookseller C. Drummond, dated April 27, 1779, reads in part:

1773 - Aug. 17	*-To Linnaei Systema naturae vol. 2.*	*£-7.0*
1774 - Nov. 17	*-To Wilckae Flora Gryphica*	*-1.0*
	-To Murray De Arbuto Uva Ursi	*-1.2*
	-To Lettsom Travellers[366]	*-2.0*
	-To Forster on Essaying Metals [i.e. -Method of assaying mineral substances]	*-2.0*
	-To Wolf Flora Bonassica [?]	*-3.6*
	-To [Saussure] *Observations sur l'écorce des Feuilles*	*-1.0*
	-To Willich De plantis [observationes]	*-1.0*
	-To Waller Mineralogia	*-3.0*

358 Taylor, "Walker," 185.
359 Gordon Donaldson and Robert S. Morpeth, *Dictionary of Scottish History* (Edinburgh, 1977).
360 Scott, *Walker*, xxviii.
361 Scott, *Walker*, xxvii.
362 Greene and Burke, "Minerals," Mitchill's interests, 49–52.
363 Heron, *Scotland*.
364 Scott, *Walker*, 15.
365 UELA Dc 2. 22.
366 John Coakley Lettsom, *The Naturalist's and Traveller's Companion* (London, 1772).

1779 Jan. 09	*-To Lightfoot Flora Scotica 2 vols.*	*-19.0*
	-To Lettsom [Natural] *History of the Tea Tree*	*-1.6*
	-To Ellis On preserving seed [i.e. Directions for bringing seeds and plants from the East Indies][367]	*-0.6*

Drummond's bill remained on account for six years. Walker had to supplement the University's resources with his personal purchases, keeping him in debt: so it is a timeless concern of the professor, and so it was with Barton. Walker's library contained 582 titles when it was sold at auction after his death.[368]

Walker enhanced his teaching with a zoological museum purchased from Alexander Weir, "a most ingenious man [who] certainly has not hitherto been so much encouraged by the public as his merit deserves." It was while trying to ascertain from the University Lord Advocate in July 1804 Weir's method of drying fish like herbarium specimens that Barton expressed his feelings for Walker.

> *I lately, for the first time, heard of the death of our excellent friend, Professor Walker. Under the Edinburgh head, in one of the English magazines, I saw a character of him, drawn, I thought, with taste and very correctly. The more I think of Walker, the more highly I am led to estimate his merits. Should any of his manuscripts, relating to natural history or to agriculture, be published, I beg you to let me know the titles of them.*[369]

Almost contemporary with Barton's days in Edinburgh are the notes taken in Walker's class, probably by Thomas Johnson, and dated May 3, 1790, reviewing the state of scientific societies including the American Philosophical Society, and with a mention of Barton's having been a student at the University:

> *Improvements and discoveries made in Natural History Since last Year.—The advancement of liberty naturally keeps pace with the advancement of literature. For all Ages and every Country they have risen and fallen together.*
>
> *The advancement of literature in this present age has been promoted by Natural History; it was the improvement of Natural knowledge that laid the foundation for the Royal Society of London which is the parent of all the other literary Societies in Europe—of all the branches of knowledge, there is none that connects and combines Mankind together more than Natural History.*
>
> *We have had of late years a Royal Society founded here. A Royal Society has also been founded in Ireland in the Year 1787 or 1788. A philosophical Society has been lately founded in America—I am informed that in America Natural History is making rapid Studies. Dr. Barton who was not long since a Student here is appointed Professor of Natural History at Philadelphia.*
>
> *There has lately been founded an Academy of Sciences at Lisbon a place where we could not have expected such—another at Cirlut in Dalmatia, on the Confines of Turkey—another new Society has been instituded at Dronthon* [Trontheim?]. *Another in Iceland. A very prosperous Society has been instituted in Bengal. Another at Cape François. And what is more Surprising still Another in Mexico—*

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367 UELA, Walker Collection, LA III 352.

368 Smallwood, *American Mind*, Walker, 70–75; also see Smallwood, *Scientific Monthly* 49 (1959): 65–70.

369 Copy. Barton Papers, APS.

> *From all these, we have reason to expect great advantage to Natural History–*[370]

Although Barton introduced William Cullen's *Treatise of the Materia Medica* to the United States in his edition of 1812,[371] we lack firsthand comment from him on Cullen's mien or lectures beyond the many references to the latter that he made in his own classes. James Anderson described him in 1790:

> *Doctor Cullen's external appearance, though striking and not unpleasing, was not elegant. His countenance was expressive, and his eye in particular remarkably lively, and at times wonderfully expressive. In his person, he was tall and thin, stooping very much about the shoulders. When he walked, he had a contemplative look, and did not seem much to regard the objects around him.*[372]

William Wightman believes it was his honest effective presentation more than innovation that distinguished Cullen's teaching.[373] He lectured in English rather than in Latin in clearly presented digests of facts, a feature that Barton tried to maintain in his American adaptation. Then, too, Cullen emphasized the importance of chemistry as a science fundamental to the many applied disciplines. Cullen died in 1790 at the age of eighty. Henry Cockburn remembered that "I only learned his look from the number of heads of him which, out of respect to his memory, were instantly set up as signs for druggists' shops; all representing him with a high wig, and an enormous under lip." He was also described as "tall, stooped, eye keen, lively." Cullen, born in 1710, had been one of nine children, the son of an attorney. He was apprenticed to a Glasgow physician, a Mr. Paisley, then went to London, and to the West Indies as ship's surgeon, his observations on tropical diseases often alluded to in his lectures. After employment with a London apothecary, he attended the University of Edinburgh, 1734–1736, practiced at Hamilton, and in 1740 obtained his M.D. degree from the University of Glasgow, lecturing there on materia medica and botany from 1746. He differed in his medical views from Boerhaave, whom he called a "whimsical innovator." Cullen came to Edinburgh in 1755, and six years later, when Alston died, he succeeded him.[374]

Caspar Wistar, who had been a student at Edinburgh the year before Barton's arrival, wrote Dr. Rush in Philadelphia 26 June 1785 on news from the University: Dr. Cullen is in "extreme good health & busy in preparing the Materia Medica for publication. In the course of the winter I have been so fortunate as to see him several times & he allways enquired particularly after you." Cullen is pleased, Wistar wrote, with Rush's extension of Cullen's doctrines. "Skepticism in Theory is now extremely fashionable here..." He mentioned Spalanzani's criticism of Linnaeus: "The arrangement of animals and fossils [proposed by Linnaeus] had often been called in question but his Botany seemed to triumph over all its opponents until Spalanzani revived the opposition by a new lot of experiments which enable him to deny the universality of the Sexual system."

In turn, Wistar told Cullen that Rush held a twofold capacity as politician and physician. He also commented that "it is not in theory only that these changes are taking place, practice

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370 UELA, General, 50–53. vol. 1, p. 1. This transcription differs in minor details from that quoted in Scott, *Walker*, 6.

371 Appendix I, Bibliography of Barton's Writings, no. 158.

372 In "Cursory hints and anecdotes of the late Doctor William Cullen of Edinburgh," *The Bee* 1 (1790–1791): 45–46, 121–125, 161–166 (Public Library, Edinburgh).

373 William Wightman in *DSB*.

374 Pettigrew, *Memoirs*, 4: 112, portrait by Martin, 1777; Robert Chambers, *Biographical Dictionary of Eminent Scotsmen* (n.p., 1840); Robert Thin, *College Portraits* (Edinburgh, 1927), 50–55, portrait by Wm. Cochrane.

suffers a revolution also. I have lately seen Peruvian Bark exhibited to the beginning of the hot fit of an intermittent & (what is strange to tell) without any harm."

Wistar wrote again to Rush, 7 September 1785, that there is new speculation on the cause of animal heat, which has "not acquired much reputation for the author." The use of opium in syphilis continued the subject of experiment and dispute: "I believe it has failed oftener than it has succeeded." Dr. Cullen says he will have his "Material Medica fit for publication & accordingly is at work at it...He intends to live 10 years longer if he can."[375]

Cullen's *Treatise of the Materia Medica* (Edinburgh, March 1789, 2 vols.), was issued close to the date Barton sailed for America. The 1789 edition of his *First Lines of the Practice of Physic* (Edinburgh, 2 vols.), was purchased by the Pennsylvania Hospital in 1790.[376] Cullen remained Barton's idol, although with developing criticism of his practices over the years. He had been a further inspiration for Barton's study of the medical properties of American plants.

On receiving a copy of Cullen's *Treatise*, Sir Joseph Banks wrote him, "Ages to come will thank you & the present I trust & hope is sufficiently sensible of the benefit of which they reap the first fruits, to render the evening of your life pleasant by gratitude & attention." Charles Blagden, Gower Street, 2 June 1789, acknowledged the copy sent to the Royal Society in London, "Whenever I have heard it the subject of conversation, either on a Saturday evening at Sir Joseph Banks or in any other company, it has always been spoken of in the handsomest manner."[377]

Dr. John Coakley Lettsom of London expressed his opinion on 3 August 1789 to Cullen: "As I conceive this work, [it] will be considered as the most important medical performance of the century, one cannot but wish with singular ansciety , that the author may long be preserved to instruct the world by new exertions: it is hence that whilst I fear thy health may suffer by thy intended 5th volume, I cannot avoid being niggardly enough, to hope to see it completed."[378]

Barton enthused over Cullen's teaching and knowledge in two letters he wrote to Rush in January and March 1787. He reported that he had been ill during the summer and that he had journeyed to London to deliver his manuscript of *Observations on some Parts of Natural History*, which appeared early in January of 1787. He said he was awaiting Cullen's *Materia Medica*, for which Professor Walker had the highest praise. He mentioned Samuel Smith's *Causes of the Varieties*, adding what he thought of it. Thus, in his first letter to Rush, 24 January 1787, he does not mention that the "new edition with the notes" is his own work, but that may have been his youth and the criticisms he anticipated for diverting from studies. That Barton believed there would be an appreciated place for Mr. Lockhead in the wilds of America was witness of his youthful ideals and hopes:

> *24 January 1787 Edinburgh*
>
> *Dear Sir*
>
> *I received your very polite and friendly letter some months ago; and I should have answered it before this had not the multiplicity of my business prevented me. I hope, therefore, your candor will induce you to overlook this seeming negligence, and to believe that I am not unmindful of your former attention towards me.*
>
> *I thank you for the advice you have given me concerning my haemopthysis; & I am also much obliged to you for the theory of that disease & for the operation of salt in it, with which you favoured me:—I desired my brother to inform you that I had used that medicine, with adverse benefit, before I received your letter; having heard you deliver your opinion &*

375 Rush Letters 29: 124, 125, HSP.

376 *Catalogue of Library, Pennsylvania Hospital* (Philadelphia, 1829), vii. Barton would surely have obtained a copy of *First Lines*, but none remains among his surviving books. Ewan, "Barton's library."

377 Dawson, *Banks Letters*, 244, refers to copies sent both to Banks and to the Royal Society in London.

378 Cullen, Correspondence, Royal College Physicians, Edinburgh.

practice concerning it in your lectures, I think, in the years 1785 & 1786. I am in hopes your volume which you mentioned to me will shortly make its appearance:–

I hope you have already received a copy of my little work, which I took the liberty to transmit to you:–I have not the vanity to think you could receive any information from it; the subject was almost new in Europe and for the curious here it was principally designed: if however it has afforded you even an hours amusement I shall think myself proud in having had an opportunity of transmitting it to you. A curious and much more important part will shortly make its appearance:–I flatter myself it may be of some use to my countrymen; it related principally to the subject of agriculture. I mean to dedicate it to the Society instituted in Philadelphia for the promotion of that art.[379]

Medical matters continue in a flourishing and improving state; but I am sorry that the Materia Medica of Dr. Cullen, from which so much important information is expected, will not probably be published before the end of the present year.–Dr. Munro's large work on the Bursae Mucosae is nearly printed off–whether it will be entitled to much merit, considered as a practical work, may be doubted.[380]

I have desired Mr. Elliott [the publisher and bookseller] *to send you, by the first opportunity, the last volume of the Medical Commentaries*[381] *of this place;–which contain an account of whatever is new in medicine.*

If you could spare a few minutes time I should be glad to hear of the Medical State of your college.–I am confident exertions are not wanted on the part of the professors, but I wish to know whether the number of students, which resort to it, continues to increase. I think there is no more certaine marke of the improvement of a people in science than their attention to medicine;–and I am now convinced, by experience, that little is wanted in Philadelphia to make that school one of the first seats of medicine in the World.

I have of late been several times in company with Dr. Moyse; he has just begun a course of lectures here; and as yet he appears to want no encouragement: The doctor speaks of America and its inhabitants in the most affectionate manner; he is constantly enquiring after you;–and desires to be remembered to you. My sickness last summer prevented me from staying in Edinburgh; so that I was deprived of the advantage of attending lectures on Botany which you know is considered a necessary part of education here:–I am therefore under the necessity of remaining here till next September; you will oblige & honour me to return you my thanks, in my dissertation for the many advantages & favours I have received from you.–

Mr. Smith's Essay on the 'Varieties of Mankind' has made its way into Scotland; and a new edition with the notes is now in the press of Mr. Elliott;–the work will be a popular one; and consequently it will sell; yet if I might be indulged in making an observation on the subject: I should say that many things which the very ingenious author considers as new have long since been published by Drs. Blumenbach & Hunter; and the greater part of his remarks have been previously made by the very learned Dr. [Johann Reinhold] *Forster. If again we consider those parts which are properly Mr. Smith's own,*

379 To the Pennsylvania Society for the Promotion of Agriculture–was it published?

380 Alexander Monro *secundus* (1733–1817) was the most highly regarded of the three generations of physicians.

381 *Society for Promoting Medical Knowledge, Medical Communications* (London, 1784, 2 vols., with plates) is at LCP. Did Barton send this copy to Rush?

such as his theory concerning the Bile, I believe we shall find them too frequently founded in conjecture in a very slender observation of the phenomenon of the human body. There is one circumstance to which I could wish Mr. Smith had paid some attention: I mean the colour of whether black, copper,—or olive, at the birth of the child. Mr. Smith says it requires the long & continued operation of the Sun &c to impress these colours on the body; & yet he might have observed that the colour of the African & of the American [Indian] *is impressed in a few days; whether the negroe inhabits his own or another climate,*[382] *or whether the American* [Indian] *lives in the fervid regions of the Carolinas or the Floridas, or whether he is freezing on the Banks of the St. Lawrence.—But pardon this presumption—the enthusiasm of science frequently carries me beyond the bounds of diffidence & good breeding.*

I have not to mention to you a circumstance in which I am very much interested: there is a Scots gentleman, Mr. Lockhead, a very particular friend of mine, now in Edinburgh;—He has for several years past, applied himself with great assiduity and success to the study of medicine and the several branches of n[atural] *history: he is rather in low circumstances; but possessed a most enthusiastic desire to visit America, merely with a view to investigation of its natural productions; he is not in circumstances to venture across the Atlantic without the probability of succeeding in his design; which is to practice medicine in some of the western parts of the States, the more remote from cultivation the better, providing he can make a decent living & be enabled to cultivate his taste for nature. It occurred to me that a person of Mr. Lockheads extensive knowledge would be a very valuable acquisition to such a place as Fort Pitt, Washington, or any other place you may think of—and as such I have ventured to mention him to you. If these places are already supplied with physicians he would be proud to accept business of surgeon to some one of the western forts, such as McIntosh, Fort Harmer, or what perhaps would be still more acceptable a recommendation from you to some person of influence in Kentucky who might have it in his power to bring him into notice as a physician there.—Mr. Lockhead is between twenty & thirty years of age; he is a gentleman of the most strict moral character, and whose knowledge, as I before observed, is very great; Dr. Cullen, who is his friend has promised to write to you on the subject, and I can assure you that anything he can say will not be even sufficiently expressive of his merit.*

It is a pitty that a worthy and ingenious man, such as Mr. Lockhead, should be lost to the world, especially as his views are so noble, and as he may have it in his power to do a most essential service to the science of nature in America. To you who have long been a patron of worth and learning I have taken the liberty of mentioning this gentleman. Your exertions in his behalf will be ever gratefully acknowledged by your pupil.

As Mr. Lockhead is anxious to know the event of this application in his favour, I shall esteem myself under an obligation, of a peculiar nature, to you, if you will favour me with a line on the subject as soon as possible. Meanwhile, I remain with the most sincere regard & esteem, Your humble servant & Pupil, Benjamin Smith Barton.

PS Mr. Lockhead has been for several months, a tutor in the house of the Earl of Selkirk. Pray excuse this hasty scrawl. Edinburgh, January 24th 1787.[383]

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382 Barton had probably seen a newborn African babe, and had been impressed with its pale-blue color.

383 Rush Letters 27, HSP.

Barton's letter was addressed to Rush, "Professor of Chemistry in the University of Philadelphia" sent via the "Care of Mr. Dilly, no. 22 Poultry, London." Dilly, it will be recalled, was Barton's publisher for his *Observations* and in a real sense his London agent.

At this time, William Lockhead was an Edinburgh student who did not receive a medical degree. He later became assistant to the Scot, Alexander Anderson, M.D., at the Caribbean St. Vincent Botanic Garden. They welcomed the brig *Providence*, Captain Bligh, of *Bounty* fame, in 1793 with her "valuable cargo" of 530 breadfruit plants from South Seas. Anderson wrote to Banks three years later that the breadfruit[384] plantings were thriving.[385] In his letter of 19 July 1803, Anderson also reported to Banks that Lockhead was a good botanist but was involved in politics to the detriment of botany. When the "industrious and respectable botanist," the "virtuous Anderson" died 8 September 1811, Lockhead succeeded him. Barton sought to re-establish correspondence with his former Edinburgh friend in August 1813, but Lockhead, according to his successor Rev. Lansdown Guilding, was about this time suspended "by the authorities in England," although re-instated in October 1813. This may explain why no answer appears among the Barton letters. Lockhead died at St. Vincent 22 March 1815.

Barton again wrote to Rush as though he had received no letter, mentioning his worsening health and his plan to take a holiday on the Continent. Experiments with foods to determine the associated animal secretions interested him at this time. Barton would value the use of experiments on living subjects throughout his teaching career.

Edinburgh March 21, 1787

Dear Sir

I should long before this have made some acknowledgement for the many favours I received from you just before my departure from America; had not a bad state of health & a multiplicity of business prevented me. I flatter myself, if however an apology is hardly necessary as you well know from former experience, how difficult a matter it is for a student of medicine in this university to snatch even a few minutes from the day:—

There is but very little new in medicine here at present but we are in great expectations from the great work of Dr. Cullen on the Materia Medica: Professor Walker who has seen a part of it in manuscript, speaks in the highest Terms of it; he informs me that the article [he?] *did in particular is treated in the most learned & ingenious manner, and that in every part of the work, these talents for which the author is so remarkable are eminently displayed. The old gentleman still preserves his intellect unimpaired & his vivacity is that of young mien; I fear his death (which I hope is very distant) will not terminate the reputation of Edinburgh as a school of medicine.*

I have been for some time past engaged in making experiments on the nature, properties, effects &c of the Hyoscyamus niger of Linnaeus & these experiments have been thought worthy the Harveian Prize for last year: I am now engaged in a course with animal & vegetable diet on myself, & on dogs, rabbits, &c. My intention is to see how far the powers of Assimilation take place in animals; or in other words, to discover whether the nature of the several animal secretions may be changed by a diet of animal or vegetable food? I hope you will excuse the freedom I am using with you. I am sure

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384 [Johann Reinhold Forster and Johann Georg Forster described the breadfruit genus *Artocarpus* in 1775, familiarly represented by *Artocarpus altilis* (Parkinson) Fosberg (1941) today. IPNI.]

385 Dawson, *Banks Letters*, 18; Lansdown Guilding, *An Account of the Botanic Garden on the Island of St. Vincent* (Glasgow, 1825; reprinted Jamaica Plain, Mass., 1964), 13–15. Richard A. Howard, *Flora of the Lesser Antilles* (Jamaica Plain, Mass., 1988), 4: 3–4. On Rev. Guilding (1797–1831), Richard A. and E. S. Howard, *Phytologia 58* (1985): 105–164.

nothing which has the least reference to medicine will be uninteresting to you, whose labours have been so successfully exerted for the improvement of the science.

I hope to have it in my power to write very fully to you from France, in a short time, the very precarious state of my health rendering it necessary for me to leave Britain for a few months. Meanwhile believe me to be with the greatest respect, your most obedient & most humble servant & pupil, Benjamin Smith Barton.[386]

That Barton suffered ill health frequently most of his lifetime is certain, but he had early learned to use it as an excuse. Here in Edinburgh, not wanting to divulge to Rush his real reason for spending time away from Edinburgh, he was to travel for his health.

386 Rush Letters, HSP.

Chapter IV

Edinburgh II

"The enthusiasm of science frequently carries me beyond the bounds of diffidence and good breeding."
—Barton in Edinburgh to Dr. Rush

Scholar and Entrepreneur

After his visit with the venerable John Hunter in London, Barton sailed by packet for Glasgow, where he was welcomed into the Almack (Aylmack) family home through their son of approximately Barton's age, and with him visited the University. The elder William Almack (d. 27 October 1806) was a barrister, who had married a sister of Dr. William Cullen. Barton went on to Edinburgh early in August of 1786 and took lodging in a private home in Buccleigh Place, close to the University, since William Robertson, principal of the University, did not favor the English practice of housing numbers of pupils together. One characteristic street, Park Place, has been described as serried dwelling houses of four stories besides garrets, with fore courts and cellars below the street, and with a back court and garden. There were two rows of stables and a coach house next to the wall bounding on the east the public walk leading to Hope Park.[387] On 23 August Barton's newfound friend, young William Almack from Glasgow, introduced him to his uncle, Dr. Cullen. On Monday the 12th (of September?) came an invitation, "Mr. Barton [at] Miss Edwards, Buccleigh Place. Doctor Cullen presents best compliments to Mr. Barton begs the honour of his company to Supper on Wednesday Evening at Nine o'clock. Visit Monday 12th."[388]

This was probably Barton's introduction to the paragon so admired by his American professors, and the occasion when he presented his letters from Drs. Morgan and Rush to Dr. Cullen. Propitiously began Barton's first months at Edinburgh. A particular student friend at the University was William Jameson (1771-1836) who welcomed him into his home "Brickfield," then in Leith on the Firth of Forth, now within the city of Edinburgh. Barton was visiting the family on 8 May 1788, when he transcribed some of William's notes taken in Walker's class. William's mother died in 1794, and his father in 1802, but not before he had made some arrangement for William's welfare, since sometime before 1802 William had gone blind. He died unmarried. His brother Robert, who was three years younger, first practiced as an assistant surgeon (an apprentice?), but after attending Professor Walker's lectures in 1792 and 1793 he abandoned medicine for natural history. In 1798 Robert Jameson published "Mineralogy of the Shetland Islands and of Arran," and other districts of Scotland. He studied two years at Freiberg, influenced by Johann Werner's theory of the Earth. In 1804 on Walker's death he was appointed Regius Professor of Natural History and Keeper of the University Museum.[389]

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387 From a scrapbook compiled by Boog-Watson, "Minutes of the Town Council, 4 July 1793" in the City Library, Edinburgh.

388 Thomas Pennant Barton collection, BPL.

389 Articles on Robert Jameson appear in *Annals of Science* 19 (1965): 81-116; 23 (1967): 81-95, 97-126. His portrait is in the Scottish National Portrait Gallery. *DNB*; Joan M. Eyles in *DSB*.

The brothers Robert and William, both outdoorsmen, shared their interest with Barton on the long walk from the University to Leith, which for Barton was observing seasonal flowers in the hedgerows, different weeds along the path, and new Old World birds o'erhead. Was it with the Jamesons that Barton visited Bass Island on the south side of the eastern entrance to the Firth of Forth? "The pleasure I experienced in contemplating the Bass-island so remarkable for the vast congregations of 'fish-tasted birds.'" These were the Solan Geese he occasionally ate "while a student," but now he would find it "difficult to reconcile myself to taste of [them]."[390]

One Charlestonian who took his degree in 1788 was Joseph Nicholas Wilson, who inscribed a copy of his thesis on tetanus to "Mr. Barton from his friend and countryman J. N. Wilson." He had dedicated the thesis to his father, John Wilson; to a Charleston surgeon, Peter Fayssoux; and to Governor John Drayton. Another Charlestonian, Samuel Wilson, was a student at Edinburgh from 1784 to 1786 but finally took his M.D. degree in 1786 at Glasgow. On 11 October 1814 Samuel Wilson wrote Barton in the ongoing tradition introducing his third son Samuel as a potential pupil, to attend the second course of lectures at the University. "I would have taken the liberty of writing to you when he first went to Philadelphia but was afraid that you might not have remembered me."[391] The son became interested in ornithology and an associate of Audubon. He evidently moved to Scotland.[392]
Traditionally mornings were devoted to attending lectures, many of which were given in Latin and read by the professor. Afternoons and evenings were customarily spent in rewriting the notes in full and in reading. There were opportunities to attend the physicians' rounds in hospital or infirmary. The fee for each class was three guineas a year, although Dr. Hope, concentrating on botany rather than on materia medica, was permitted to collect only two, for some reason. The fee for infirmary classes was also three guineas. Three years at Edinburgh or other university were necessary to qualify for the medical degree. Classes in which Barton enrolled were Anatomy and Surgery, Chemistry, Practice of Physic, and Institutes of Medicine.

Barton had soon proved himself an attractive, agreeable, outstanding, and enthusiastic student keenly interested and alert to the cultural opportunities of the University and its environs. There were several societies in which every member was required to present papers, discussions of which then followed. Some pupils concluded that they had learned more from society meetings than from professorial lectures! On 14 December 1786, Barton was elected a member of the "Society Instituted here [in 1782] for the encouragement of the study of Natural History among the Students," the organization initiated by James Edward Smith. Among the members was Thomas Mann Randolph (1768–1828), graduate of William and Mary College, and Jefferson's cousin, who would become his son-in-law. He had arrived for three years of study in 1785, and that first year, 15 December, delivered a paper "on bird migration: the periodical appearance and disappearance of birds." Jefferson had written

390 Barton in *Cullen's Treatise* 1: 245.

391 Rendall, "Influence," 114.

392 Waring, *South Carolina*, 329, portr., 328. Other Americans who earned medical degrees at Edinburgh, 1787–1790, and who may have known Barton when he was a student there were: Alexander Schaw Feild (? – ?) M.D. 1789, son of Dr. James Feild, d. 1788 (Blanton, *18th Cent.*, 87, 353); Richard Feild (1767–1829), M.D. 1790, practiced in Petersburg, Virginia, son of Theophilus Feild, interested also in botany and agriculture (Blanton, *18th Cent.*, passim); William Hammersley (d. 1833), M.D. 1787, from New York (Langstaff, *Bard*, 339); William Hardy (1766–1828), M.D. 1788, "Of America"; Richard Sharpe Kissam (1763–1822), M.D. 1787, of New York, pupil of Dr. MacKnight in New York, became Professor of Botany at Columbia College, 1792–1793 (Langstaff, *Bard*, 345); Daniel Moores (1745–1802), M.D. 1787, of Maryland, apprenticed to Dr. John Archer, Hanford Co, Maryland; Augustine Smith (? –1805), M.D. 1787, of Yorktown, Virginia (Blanton, *18th Cent.*, 348, passim); John Smith (1767–1799), M.D. 1787, of Georgia; George Pitt Stevenson (1768–1819), M.D. 1789, of Maryland, grandson of Dr. H. Stevenson; Robert Walker (? –1820), M.D. 1787, of Petersburg, Virginia, whose sister married a brother of B. S. Barton, M.B. University of Pennsylvania 1785, studied under Shippen (Blanton, *19th Cent.*, passim); James Box Young (? –1800), M.D. 1789, of Georgia.

Randolph encouragingly from Paris of his choice of the University of Edinburgh, but with a warm feeling for his native land:

> *Your own country furnishes the most aliment for Natural History, Botany and Physics, and as you express a fondness for the former you might make it your principal object...In fact you will find botany offering its charms to you at every step, during summer, and Physics in every season...You are now in a place where the best courses upon earth are within your reach,...Besides the comfort of knowledge, every science is auxillary to every other.*[393]

Randolph attended the natural history lectures of Dr. John Walker in the summers of 1785 and 1786, entranced by Walker's "extensive information" and the "enthusiastic pleasure" he took in "propagating the knowledge," a pleasure that Barton also shared when he listened to him. Randolph was elected President of the Natural History Society 5 April 1787. Eventually it was the law, however, that became his profession, theology a "department of the imagination."[394]

On 14 April 1787 Randolph wrote to Jefferson, "...I have taken the liberty to procure the seat of an honorary member for you in the Natural History Society...I should not have thought the honor worth your acceptance, was not the list already adorned with the names of Black, Priestley, and Pennant. Mr. Barton will deliver the diploma..." Randolph and Barton were among the members who signed the "diploma," which had been dated 22 February 1787. It was recorded by Jefferson as having been received 25 May 1787 at Bordeaux.[395] Barton had taken it to London, and in late April or early May had forwarded it from there. The diploma was not held till 1788 and delivered then by Barton as some writers have stated, but was delivered by Randolph. Adam Kuhn had been elected an honorary member that same year. The society kept a "List of such gentlemen as by their presents or communications, have deserved the title of Benefactors of the Society," and Barton was listed as the eighth among fifteen. On 6 December 1787, now back from a trip to London, he was elected president and read a paper "On the bones of an animal incognitum."[396] On 22 December that same year he was elected to the Society of Antiquaries of Scotland and on 15 January 1788 to the Speculative Society, where he read his paper on the American Indian.

His most important membership, however, was in the Royal Medical Society of Edinburgh where on 23 December 1786 he had been elected a president.[397] He had presented a paper on a subject long of interest to Americans, on the "Alteration in the Colour of a Negro Woman."

Scots Magazine carried a notice that Thursday, 12 April 1787, there was delivered in the Hall of the Public Dispensary at Edinburgh a paper on the writings and character of the late Dr. John Gregory. "After this, the prize medal, given annually by the Harveian Society for promoting experimental inquiry among the students of medicine, was delivered to Mr. Benjamin Smith Barton, of Philadelphia, for the best experimental essay on the properties of

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393 Boyd, *Jefferson Papers* 10: 305–309.

394 ibid., 260; Gaines, "Randolph," 15; T. P. Abernathy in *DAB*.

395 Boyd, *Jefferson Papers* 11: 293.

396 Stewart, Nat. Hist. Soc.

397 The Royal Medical Society of Edinburgh, founded in 1737, was given a Royal Charter in 1778. Dr. Playfair had been a vice-president, then president in early years. Caspar Wistar from Philadelphia was elected annual president 11 December 1784; C. P. Thunberg, an honorary member 11 March 1786; B. S. Barton, annual president 23 December 1786, and was one of the "encouragers" for the election of the following honorary members in 1787: B. Franklin, 10 February; W. Shippen, Jr., 2 February; T. Jefferson, 22 February; J. Priestley, 31 March; David Ramsay, 7 April; John Morgan, 7 April; and in 1788, John C. Lettsom, 22 March. From Anonymous, *Annual List of Members of the Medical Society of Edinburgh* (Edinburgh, 1835).

the Hyosciamus niger."[398] Three days later, on the Ides of April, he presented his paper before the Royal Medical Society and received a "superb quarto edition of the works of William Harvey elegantly bound and gilt."[399] This was *Opera omnia a Collegio medicorum Londonensi edita* (London, 1766), 673 pages with a portrait of Harvey. It had been presented by the *Sodalitas Edinensis filiorum Aesculapii*, the Latin inscription on the flyleaf signed by Andreas Duncan, senior secretary. Judges described Barton's method:

> *He next proceeds to determine its effects on the system of men and of other animals...These experiments which were begun upon himself, and confirmed by similar trials on others, clearly prove the sedative power of this substance...Four grains of the resinous part of the extract of hyosciamus united with twelve of the extract of liquorice, were given to a vigorous man in the 24th year of his age...It demonstrates the truth of what has lately been asserted by an eminent English physician, 'poisons in small doses are the best medicines and the best medicines in large doses are poisonous.'*[400]

Here, then, was the basis for Barton's reputation in his later practice in Philadelphia—his modest doses.

The prize was withheld from Barton, just how long we do not know, but presumably until he repaid a debt to the Society. Sometime before, he had taken "a considerable sum" of the Society's money that had been entrusted to him as one of the presidents. This misdeed was to shadow his whole life, his health, and many of his professional associations, especially with Benjamin Rush. Had he taken the money, hoping in London to invest it in publication in order to fill a purse emptied by club memberships and book buying? If there is any official record of his misconduct at the University of Edinburgh, it is hidden away in archives, and we found no reference to the affair. Nor did he (or his executors) preserve any correspondence repeatedly reminding him of monies due, nor receipt of payment. His duplicate copy of his letter of July 1804 from Philadelphia to the Lord Advocate of the University of Edinburgh states that three letters of his had not been answered. This last letter was primarily a request for information on preserving fish. Barton did not mention any obligation, instead referred to his delicate health, and his hopes for the publication of his "Flora of the middle states." In 1815, however, as he planned his trip to Europe, he sent books to professors at Edinburgh. He had entrusted an envelope to Frederick Hall, who intended to visit that institution in 1810. Had it contained payment for his long overdue debt? We assume it did, since Harvey's *Opera* finally reached Barton and was treasured by his son.

There are letters from Philadelphia students that suggest part of the story. John Penington, who died in 1793 before his sister Mary became Barton's bride in 1797, wrote his preceptor Dr. Rush from Edinburgh on 3 August 1790 that "Pride and reserve prevail among the professors, idleness & dissipation in the generality of the students." While we cannot think Barton would have been included among the generality, the reserve of the Professors especially toward American students may have been influenced by Barton's misconduct. On 20 June 1791, on Penington's way back home he wrote again to Rush:

> *I am in London. I delivered your kind introduction to your friend Dr.* [John Coakley] *Lettsom who received me politely...I am sorry that the Character of an American Student does not stand high here, many of them*

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398 *Scots Magazine* 49 (1787): 203. "Henbane," in Charles B. Heiser, Jr., *Nightshades, the Paradoxical Plants* (San Francisco, 1969), 147-153, illus. and photo. [Described by Linnaeus in his *Species Plantarum* (1753, p. 179) as "habitat in Europae ruderatis pinguibus," this is *Hyoscyamus niger*, Black Henbane. LPND. IPNI.]

399 W. P. C. Barton, *Elements* (1836), 16. Harvey's *Opera omnia* went with Thomas Pennant Barton's library to BPL.

400 *Medical Commentaries* (Edinburgh) 11 (1788): 400-405.

behaved ill, Dr. Barton particularly so, who it is said borrowed Money dishonorably which he never repaid, among others Dr. Lettsom was a Sufferer for 20 Guineas.[401]

When, after his arrival home, Barton would not produce his diploma, Rush was concerned with the diffidence of one who had been an outstanding pupil and still was not satisfied with Penington's report. As the differences between the two physicians increased over the years, he queried Dr. James Wallace of Virginia, who had been an Edinburgh pupil in 1791–1792. Wallace replied 11 March 1811:

When at Edinburgh I became a member of the Royal Medical Society of Edinburgh. That Society chooses four Annual Presidents out of their own body. I was informed by the Members that Dr. Benjamin Smith Barton of Philadelphia had been one of the four Annual Presidents, that he had received during the season or seasons he presided a considerable sum of Money belonging to the Society, that he left the City of Edinburgh without placing the above mentioned money in the Treasury of the Society—that he had been repeatedly written to on the subject—that he had promised to reimburse the money, but in 1791 some years after his delinquency the money was not reimbursed. In 1792 the members of the Society feeling indignant at so foul a transaction & at his indifference on the occasion, thought he ought to be advertised Per totem Orbem Terrarum. Mr. Thomson one of the Annual Presidents in January 1792 ('tis possible I may mistake the name, but I think I do not) rose with a view to make a Motion to advertise Barton, & [he] *having made some exordium I went to him & used some arguments against the procedure lest the American Students might suffer from the advertisement. Mr. Thomson kindly declined the Motion & resumed his seat. A general conversation then took place & I heard no more of the Affair.*[402]

Barton's purposes and emotions are shrouded in mystery. Did his desperate need for financial replenishment lead him to borrow the sum necessary for him to continue? Had he publishing schemes in mind—in which he planned to invest the money—with all the conviction of success of a very young and inexperienced entrepreneur? Now in London he wrote to Rush 2 July 1787 telling him that Mr. Dilly[403] had informed him that the American Philosophical Society had granted Dilly reprint rights for Volume One of the Society's *Transactions*, and that the *Monthly Review* had announced it for June. However, Dilly had received a letter from Mr. John Bleakley of Philadelphia that the Society had "altered their intention." Barton hoped that Rush would intercede to permit the reprint, "wanted both in America and in Europe." Dilly has Volume Two for sale, "but will find sales difficult if Volume One is not to be had." Barton then continued to Rush:

I am sorry I am unable to give you any account of the Professors at Edinburgh as I have been in London for some time past, and I must shortly

401 Rush mss. 13, 44, 45; Bell, "Barton," 201. Barton eventually did repay Lettsom with interest, which Lettsom had not expected.

402 Rush mss. XIX, 19, LCP.

403 Charles Dilly, printer, bookseller, at Rose and Crown 22, *In the Poultry*. Dilly was well known as publisher of Boswell's *Life of Johnson* (London, 1791), and various musical imprints. Jefferson bought books from him. There is his letter of 13 September 1786 mentioning books to be sent to Paris via Ostend, or by the diligence, suggesting that Jefferson had visited Dilly's shop while in London in April that year. ("More Books," *Bull. Boston Public Libr.* 18 (1943): 156).

leave it, my health being so precarious that a voyage to Madeira is thought necessary should I arrive there in tolerable health. I shall be proud to give you every possible information concerning the diseases of the island. I have determined to take with me a small collection of books relative to medicine and natural history, and I mean to pay the greatest attention to the history of the island.

I am with greatest respect and Sincerity your most obedient and much obliged humble servant and pupil,

Benjn S Barton[404]

Note there is no mention in the letter of his financial embarrassment, his health alone having been blamed for his leaving Edinburgh. There is, however, mention of one of the causes of his recurring shortage of monetary funds: the "small collection of books," which through the years was to develop into his rich natural history library, and undoubtedly to the delay in his repaying those to whom he was obligated. There is no further mention of Madeira.

In London Dilly did print for Barton his *Observations on some Parts of Natural History* Part I (1787), an octavo of about 80 pages, dealing with Indian Mounds. It did not create the interest or sell as Barton had hoped, for it was hastily written, and he soon regretted it. Furthermore, it had put him into debt to Dilly, of which Dilly reminded him in his letter of 1790. Five hundred sheets of "Part Two" were printed, but were stored awaiting payment. There was also *Prodromus Florae Pennsylvaniae*, which Dilly had begun to publish in 1788. These were probably the transactions referred to by Barton's patient and understanding Quaker friend, John Coakley Lettsom (1744–1815) (Figure 32) when he wrote to Barton, then back in Philadelphia, on 26 August 1800: "In some concerns with my bookseller, C. Dilly, I've took thy note, but I never thought of interest, which I learnt was paid with the principal." Barton dedicated *Collections* (1804) to Lettsom, recalling "Your attentions to me during my residence in London, in the year 1787, were those of a kind and affectionate friend, and cannot be readily forgotten. Nor have you withdrawn your attentions, notwithstanding the distance by which we are separated from each other." For his readers he recorded: "I was introduced to this eminent physician when in London, about four years ago, by my friend the present Dr. Rush; and the warm and friendly manner of his inquiries after his old friend strongly evidenced, that the high esteem he had conceived for him, was neither abated by time, nor effaced by distance."

Lettsom had been the most helpful person in London to the young American visitor. He was born on Jost van Dyke, a small island near Tortola, West Indies, in the year 1744, his father a cotton and sugar planter, his mother of Irish ancestry. Lettsom was sent to England for schooling at Warrington, a Quaker academy where Johann Reinhold Forster and Joseph Priestley were instructors. In 1761 Lettsom was apprenticed to Abraham Sutcliff, an apothecary at Settle in Yorkshire. After five years, there followed his experience at St. Thomas's Hospital, London, and in 1767 he returned for a short residence to his ancestral island, where he freed the fifty slaves that had been the family property. He took his M.D. degree at Leiden in 1769.[405] His botanical interest showed when he lived in Yorkshire and made plant impressions from specimens collected about town, naming the images with the aid of a borrowed copy of Gerard's *Herbal*. After entering practice in London, he began a garden, certainly encouraged by Dr. John Fothergill, who had been William Bartram's patron. Lettsom had acquired seeds and shrubs before 1780 from nurseryman Humphry Marshall (1722–1801), kin to John and William Bartram, and author of a catalog of his stock, *Arbustum Americanum*, to encourage orders from Europe. Lettsom wrote to Marshall in

404 Rush Papers 27: 4, HSP.

405 Abraham, *Lettsom*, 24; *DNB*; Desmond, *Dictionary*.

1784 that he had "devoted a large space of ground for American shrubs and trees," and again that his garden at Grove Hill, Camberwell, comprised about two acres.[406]

Lettsom had a "copious" collection of *naturalia* and had acquired some of Ashton Lever's specimens at that famous auction of Lever's Museum. Writing to Cullen on 3 August 1789, he spoke of recent acquisitions from New Holland, "We have in London already seven species of Quadrupeds from this new Continent: many birds, particularly of the Parrot kind, are in our cabinets, and some beautiful pigeons. The vegetables are numerous, and I have some coming up in my stove, but of what species is unknown."[407] The "vegetables" were novelties from seed probably brought back from Cook's Second Voyage. All of this certainly excited Barton on his visits, as did Lettsom's library.

Lettsom's interest in this eager young American medical pupil and naturalist was part of his generous feeling toward America and the Americans who had come before: Shippen, Rush, and Physick, for examples, and for the plant discoveries now grown in Fothergill's and his garden from the contributions of John and William Bartram,[408] and for Peale's efforts to maintain a museum. Although we have no description of Barton's visits, Robert Jameson of Edinburgh described two that he paid in the company of Dr. John Walker on their visit to London in October 1793:

> *We went after breakfast to Dr. Lettsom's when we waited for an hour but did not get the Dr. as he was out seeing a patient, but Dr. Walker appointed me to met at his house on Thursday evening at 7 o Clock when we should go to the Dr. Observed in Dr. Lettsom's a large hall (full of preserved birds) or rather the lobby as it is. They were all put up in boxes after the manner of Sir Ashton Levers which way I now begin to like better than Weir's at least for the student of Natural History, for by having each bird put into Separate Boxes his attention is not so much drawn from one object to another and the Birds can also be better kept in this manner, as the insects are completely excluded from them. Dr. Lettsom is a very rich man, he married a lady with £40,000, and has considerable practice.*[409]

> *London, 18 Oct. 1793: Went in the evening to Dr. Walker where I drunk tea with a pretty large company of ladies, then went with him to Dr Lettsom's who I found just going into the country in a post chaise, he seemed to be an agreeable man and told me his collection consisted principally of minerals, but that they were* [in the] *country and as he was so seldom out he could hardly show them but he invited me back again and I took my departure. I observed amongst his collection of Birds Tantalus ruber, Vultur papa, Paradisea apoda &c.*[410]

The diary ends 24 October, although in one letter it is intimated that Jameson would stay in London until November; whether he ever had a real visit with Lettsom is unrecorded.

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406 An account of an evening at Grove Hill, on Friday, 22 May 1801, with over 500 guests is in *Gent. Mag.*, and Wm. Thornton papers 3: 403; LC, Ms coll. Lettsom had purchased the major part of the stove and cool house plants after Fothergill's death. He wrote Humphry Marshall that the American items in Fothergill's collection had been growing in the open, and so they had to be left at the Upton retreat.

407 Royal College Physicians, Edinburgh. Letters to Cullen, vol. 19.

408 Darlington, *Memorials*, 541-545.

409 Jameson Jour. f. 61. UELA.

410 ibid., f. 71. The birds: Scarlet ibis [Identified as *Tantalus ruber* (Wilson, Amer. Orn. viii, 41. 1814.), now known as *Eudocimus ruber* L., 1758. AOU.]; King vulture [more commonly of South America] (*Sarcorampus papa* L.); and Bird of Paradise [*Paradisaea apoda* L., 1758. ITIS.]

A very busy man, Lettsom's multifarious essays and private letters were written mostly while he was in his carriage making house calls.[411] In complimenting Cullen on the publication of *First Lines of the Practice of Physic* (Edinburgh, 1789, 2 vols.) Lettsom wrote of his colleagues: "Our profession is prosecuted here more as a lucrative than as an honourable profession; and we merely rise beyond a pamphlet, or diminutive essay. Natural History, which adds novelty at little expense of studious labour, is much more generally cultivated."[412] The Linnean Society was one of Lettsom's many memberships. He wrote Humphry Marshall that he was a very unworthy member, because of his inability to attend often.

"A man of warm heart, active benevolence and so much perseverance," in a real sense he encouraged the growth of museums that followed in the early nineteenth century. But most important to Barton, for the few years left to him, was Lettsom's acknowledgement of the twenty guineas borrowed in 1787 by the poverty stricken and beleaguered youth who had fled embarrassment at the University of Edinburgh. How very modestly Lettsom acknowledged the repayment with the interest he had not specified, nor expected.

In 1790 the managers of Pennsylvania Hospital opened a correspondence with Lettsom for suggestions and implementing the acquisition of useful books for the Hospital library, an obligation that he readily assumed and carried on for the rest of his life. The works of older authors, he wrote, should also be included in the collection since "we pretend to great discoveries, but I am persuaded the more the old writers are read, the less we pretend to have discovered, and the more we shall respect antiquity." He also recommended that the hospital library include the medical literature of France and Germany.[413] When two bibliophiles meet, there is inevitable discussion of books, and so it must have been with Lettsom and Barton. The library of Pennsylvania Hospital must surely have been one topic. Was not Barton one of the physicians in 1790 who encouraged the hospital to contact Lettsom for the purpose of enriching the library?

Another of Lettsom's many kindly acts was his founding of the Fothergill medal to be awarded annually for the best essay on a prize question proposed by a member of the Medical Society of London. Among others, William Falconer and Edward Jenner were recipients. John Mason Good (1764–1827) was awarded the medal in 1795. Dr. Good was well known in his time for his philosophical writings on natural history in the tradition of Smellie and as being more scholarly than Paley. Good was author of *The History of Medicine so far as it relates to the Profession of the Apothecary* (London, 1795); *Pantalogia; a new encyclopaedia etc.* (London, 1813) in twelve volumes, subtitled a "General dictionary of arts, sciences, and words," composed in the tradition of the French encyclopedist Valmont de Bomare; and *The Study of Medicine* (London, 1822, 4 vols., and Boston, 1823, 4 vols.), which went through six editions. On 8 March 1808, Good delivered the Anniversary Oration for the Fothergill medal on a comparison of the physiology of plants and animals before the Medical Society of London. A copy now at the American Philosophical Society was presented by James Mease, M.D., graduate of the University of Pennsylvania under Rush. Mease had a particular interest in hydrophobia, hence his interest in Good's paper. Barton would also have been interested, since in 1809 he published comments on a paper by J. F. Blumenbach regarding diseases common to both humans and other kinds of animals.[414] Lettsom may have introduced Good to Barton.

Two other physicians whom Barton met sometime in London in 1788–1789 were later involved in experimenting with vaccination against smallpox. Dr. George Pearson (1751–1828),[415] physician at St. George's Hospital, London, and Fellow of the Royal Society, was a

411 "On Lettsom," Joseph Frank Payne in *DNB*.

412 Letter to Cullen, 3 August 1789, vol. 19, Royal College Physicians, Edinburgh. Abraham, *Lettsom*, 360, writes that the greater portion of correspondence with Americans has been lost.

413 Anonymous, *Catalog of the Medical Library*, Pennsylvania Hospital (Philadelphia, 1829), vii–viii.

414 "Facts and Speculations relative to diseases," *PMPJ* Suppl. 3 (1809): 266–288.

415 *DNB*.

graduate of Edinburgh (M.D. 1773), and continued his research in chemistry from his days under Dr. Joseph Black. Pearson wrote *Outlines of Lectures on the Practice of Physic* (London, 1789–1792, 2 vols.). Rush recommended the syllabus to his son James, when he was a student at Edinburgh.[416] Barton may well have had occasion to consult his *Observations and Experiments for investigating the Chymical History of the tepid Springs of Buxton...* (London, 1784, 2 vols.), in the Library Company. Pearson wrote a hurried note to Barton from Leicester Square, 4 March 1805, giving him news of another Londoner:

> *Dear Sir*
>
> *I have been guilty of apparently great incivility to you in not noticing your interesting Letter but the fact is I waited 'till my paper was printed that I might have the pleasure of sending you a Copy.*
>
> *The latest News we have in Natural History is the very interesting Paper of Sir Jos. Banks on the Blight of Corn showing it to be from a parasite fungus of which I see there is a short account in the last number of the Medical & Chiru[r]gical Review sent to Dr. Cope.*
>
> *I am Sir with Sincere Respect Yr. much obligd & faithful Servt.*
>
> *George Pearson*
>
> *P.S. Dr. Sibthorpes' Flora Greece is also among our Novelties in Natural History.*[417]

At least once, and perhaps other times, Barton visited Sir Joseph Banks (Figure 35) at his home, 32 Soho Square in London. Fortunate in inheriting wealth, enthusiastic and curious about the world around him, Banks was now a public figure, but still "the Gentleman Amateur of Science." He had moved in royal circles, an advisor to George III, who promoted him for election to the Royal Society in 1778 when he was thirty-five, and over which Banks dominated until his death. In his youth Banks had voyaged to Newfoundland and Labrador, leaving a record of plant life, and had accompanied Cook's First Voyage on the *Endeavour*, keeping a journal that he himself did not publish, and then sailed to Iceland, not putting into print that record.[418] On his return, his efforts went into agricultural and business investments. Barton had become aware of Banks's influential position in botany and of his patronizing and promoting the scientific pursuits of others. He longed for such patronage as the Bartrams and European visitors to America, with aid from their governments, enjoyed. The subject may not have emerged, but lay in Barton's consciousness. More pressing was the immediate need of financial help. Among Barton's surviving papers there is no record of the loan or its repayment, but the loan became known.

Banks surely listened attentively to the young American's reports of investigations in the new country, and Barton found Banks and his impressive library an inspiration.[419] His appreciation of the role of books in the accuracy of whatever he hoped to place before the scientific world was enriched, and his drive for collecting, and for building his own library was stimulated. Letters passed between them at least from 1792 until 1808, and Barton dedicated the first volume of *Philadelphia Medical and Physical Journal* to him.

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416 Butterfield, *Rush*, 1039 and 1041. With Woodville, Pearson had used an attenuated strain of smallpox virus rather than of cow pox, which had been the practice during the first forty years of vaccination. See Peter Razzell, *Edward Jenner's Cowpox Vaccine: the history of a medical myth*, ed. 2 (Firle, Sussex, England, 1977), 7, et passim.

417 Barton papers, APS. No work by Pearson is now in Barton's library.

418 J. C. Beaglehole, *The Endeavour Journal of Joseph Banks, 1768–1771* (Sydney, 1962, 2 vols.) 1: 3. H. C. Cameron, *Sir Joseph Banks, K.B., P.R.S., the Autocrat of Philosophers* (London, 1952), reviewed by J. Ewan in *Science* 22 (1956): 218. For a succinct review of Banksian commentaries see Lysaght, *Banks*, 42–43.

419 Harold B. Carter published two drawings of Banks's study and library, *Bull. Brit. Mus. (Nat. Hist.) Hist. Sci. Ser.* 4, 4(5) (1974): *frontis.*

His *Observations on Some Parts of Natural History* (1787), now published, some visits with noteworthies made, and his health somewhat improved, Barton was back in Edinburgh after being in London from early May until sometime in August of 1787.

He was already regretting his premature publication of *Observations*, for in a letter to his brother William from Edinburgh 29 September 1787 he wrote:

> *When you write to me, do give me your unreserved opinion concerning this premature performance; let me however previously observe, that I am already ashamed of many parts of it; and I am confident my language has made you smile. But perhaps an apology may be urged in my behalf: the subject is entirely new, and the work was written at a time when the mind was in that fickle and inconstant state, so frequently the attendant and consequence of disease. Notwithstanding all its imperfections, I am not sorry that I have given the work to the public: I have at least the credit of having directed the attention of the world to a curious and interesting inquiry—but peculiarly so to an American. You will say, my hypotheses are puerile and crude; but can they be more so than the hypotheses of antiquaries on most subjects? I think not. You will also say I should have suffered my work to lie on the shelf for a few years; but then the facts I have given the world would have been all this time unknown.*[420]

The reason there was no Part II of *Observations* to be found is in a letter from Dilly in London to Barton in Philadelphia in 1790:

> *Of the sheets printed during your residence in London in the Second Part of your Natural History the No. 500 are all at my warehouse. But the first part which you caused to be advertised and published in 1787—a few copies were sold and those accounted for—But besides them a 100 copies by your order were sent to Mr. Cist in Phila. and others to the same place so if you are carrying on with the work from the last sheet done here you will find the scattering of the First Part will cause considerable deficiency of this part and in consequence there will not be, it is probable above 300 complete.*

Dilly believed it unwise to print proposals short of a wide and expansive plan of 40,000 or 50,000 with advertisements in London evening papers, which would cost not under forty pounds. He would consider a revision only if there were a sufficient number of subscriptions to warrant. He also awaited payment of the note due, and interest thereon. "I do not enter upon any fresh project which may involve me in additional expense—in the interim I shall print 2 or 300 proposals and cause them to be distributed." In a postscript he added, "If I print the remainder of the work you will in course order the plates when engraved in Holland to be conveyed to me." Barton turned to Dr. Lettsom for money to pay Dilly, and Lettsom acknowledged its return, principal and interest, 26 August 1800.

The pain Barton felt over his failure with Dilly lasted over the years. In 1794 in a letter to Jeremy Belknap he warned, "Be careful in your choice of your London booksellers. Charles Dilly, with whom many Americans have had dealings, is not to be trusted," this the charge of a frustrated author.

From his early days of listening with fascination to the vast lore of William Bartram, Barton had repeatedly pressed him to put into print the journal of his travels through the South. Enoch Story, a Philadelphia publisher from 1782 until about 1784, issued a *Proposal*

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420 W. P. C. Barton, "Barton," 17.

in 1786 to publish *Travels*, seeking subscribers and sending a copy (Figure 47) to Franklin. This survives among Franklin's papers with the announcement of Bartram's wish to dedicate the work to him.[421] Story wrote Franklin, "I am very desirous this curious Work should not perish for want of encouragement—and make no doubt but you will use your influence.—I have some of the cuts viz. the Indian Warrior, and Paroquet of Carolina and the Franklinia [the rare Franklin Tree *F. alatahama*] which are done by Mr. Bartram in etching..."

It was to be an octavo edition in blue boards to sell for one dollar by subscription. Six booksellers in Philadelphia alone were to accept orders, but Story did not receive the "competent number" to put the work to press. Evidently just before leaving for Edinburgh in 1786, Barton had proposed to Bartram that he take the manuscript with him for publication in London or Edinburgh, where he expected a much larger reading audience. Story, angry on learning of Barton's plan, circulated rumors that Barton was scheming to profit handsomely. Barton discussed the issue again with Bartram:

> *Edinburgh 26 August 1787*
>
> *Mr. Bartram, Sir,*
>
> *I have written two different letters to you since my arrival in Europe; neither of these, however, I suppose, you have ever received; for, if I recollect, they were sent along with some letters to my brother, in Philadelphia; and I do not find that he any where acknowledges the receipt of them—*
>
> *I hope, Sir, the pains Mr. Storey took to injure me will have no avail with you: I most solemnley protest the affair was, just as I represented it to you, a few days before I left America; and those who are well acquainted with me,—have, I am sure, too good an opinion of my honesty to harbour any unfavourable suspicions of me.—Mr. Storey insinuated to you, and to many others, that I had it in view to publish your Journal in Europe, either with ambitious or lucrative motives; now, Sir, is it not very improbable that such an intention would ever have actuated me?, a native of the same country with yourself; a person who means to spend his life there; and who, by doing such an action, could expect nothing but to have his character stamped with infamy, forever.*
>
> *I should not trouble you with a line on this disagreeable subject were I not informed by a gentleman, lately arrived from America, that Mr. Storey still perseveres in his own unfavourable account of the transaction. This is doubly disagreeable to me because from my absence from America it is not easy to warp the minds of those, who have heard Mr. Storey's account only; and because I am also deprived of the pleasure and power of taking that notice of Mr. Storey, which his base conduct has so well entitled him to.—*[422]

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421 Harper, "Proposals," 27–30. HSP.

422 Harper, "Proposals," 28–29. It was 1790 before the Philadelphia printers Joseph James and Benjamin Johnson announced that *Travels* would be put to press when two hundred subscribers were obtained. "Every subscriber for twelve copies shall be entitled to a thirteenth gratis." Orders were received not only in Philadelphia, New York, Worcester, Charleston, but from "principal book-sellers on the Continent." The copyright notice was dated 26 August 1791, but the earliest known presentation date for what Emerson termed Bartram's "wondrous kind of floundering eloquence" or "biblical grandeur" is 20 July 1792. About the well-known spelling errors in the *Travels*, William Baldwin wrote to Darlington that "he informed me, in 1812, that these Travels had not been published under his own inspection; but that he had by him all his original manuscripts, from which a more correct work might be compiled:—that it had always been his intention to publish a correct edition,—but had neglected it until old age prevented" (Baldwin, Wilmington, Delaware, to Darlington, 3 July 1817, Darlington, *Baldwin*, 234–235). A copy presented to William Hamilton, "Woodlands," 9 June 1799, now in Morton Arboretum Library has an "Errata" in Bartram's hand pasted in the back. It lists 26 corrections by page and line. *Travels* was dedicated to Governor Thomas Mifflin, Franklin having died in 1790.

Barton then told Bartram that he had recently published *Observations on Some Parts of Natural History* Part I in London, a copy of which he has sent his brother William to present to him and that the remainder of the work will probably be printed next spring, an unfulfilled hope. Barton continued:

> *By reading the part, already published, you will find, that I have not acted unfairly with your work; for I well remember that you speak of several artificial mounds or eminences, which you saw in your travels and which were similar to those which I described in my work: had I been disposed to have acted unfairly your remarks on those very curious antiquities would have added considerably to the value of my book; but not being permitted to publish those (your) remarks, I have not even mentioned your name.—*

Here Barton attacked a subject that, lamprey-like, was to impede his productive years: how to give due credit to those who were to supply him with information he deemed ripe for publication. He carefully cited published authors, particularly when criticizing them. It is interesting that he was sensitive to the besetting problem of acknowledging verbal material received from a number of sources, or that received in letters, at so early a period in his career. William Bartram did not respond as Barton had hoped. Perhaps Bartram's disappointments, especially his own unhappy pessimism following the failure of British botanists to publish his records of the new species of plants and animals, which he had sent to Peter Collinson and Dr. John Fothergill, and Barton's very youth led Bartram (he was then fifty) to decline whatever offer Barton had made to publish the journal of his travels. Barton then continued:

> *I intend shortly to publish a new edition of* [Observations] *much enlarged and corrected, and as I wish to render it as perfect, as possible, I shall esteem it a great favour if you will, at Your leasure give me some account of the mounts which you have described, in your Journal; and I shall be happy to acknowledge the favour to the Public.—*
>
> *I have mentioned your Journal to Dr. Lettsom and many other learned and worthy men: they all seem anxious to see it in print; and I am very certain the work, especially if illustrated with plates, would sell very well: now, Sir, I will take the liberty to make a proposal to you, and if you should not assent to it, I hope, you will believe that it proceeds from none but a good motive:—*
>
> *If you think me qualified to give the materials to the world, and if you have no objections to their publication, I will undertake to print them (with additions of my own) entirely at my own expense;—the work, I am confident, will sell, especially in an enlightened and curious country such as Britain: and the profits of the sail shall be equally divided between us.— Thus, Sir, you see there shall be no risk, whatever, on your part:—*
>
> *I shall be happy to hear from you, on this subject, as soon as you can make it convenient; and if you should have no objection to my proposal you may depend I shall do every thing in my power to advance the sail of the work. I am, with the most sincere regard & respect Benjamin Smith Barton.*[423]

Was Barton confident of receiving enough pre-publication support from learned and worthy men to enable publication of the *Travels* with its illustrations?

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423 Bartram papers, HSP.

While waiting for Bartram's reply, in December of 1787 Barton was elected a Corresponding Member of the Society of Antiquaries of Scotland, and on 15 January to the Speculative Society. As for the requirements for the medical degree, he must consider that the first examination for the medical degree dealt with the candidate's general literary attainments and his proficiency in the different branches of medicine. Until 1811 this examination was conducted in the privacy of one of the professor's homes. Then the pupil was required to submit a medical thesis. There followed a more detailed examination by two professors in the presence of the faculty on different branches of medicine. A fourth requirement was to answer in writing and to defend before the faculty answers to questions related to two case histories. Finally, printed copies of the thesis were presented to each member of the medical faculty, and the candidate then had to defend his thesis before the public on Graduation Day.[424]

Barton began, but did not complete "Dissertation XXII: Dissertation on Albinos." The Recorder, "W. J.," of the Royal Medical Society, noted:

> *The Author of the following dissertation having been prevented, by indisposition, from finishing many parts of it, he had desired the Recorder to leave various blank spaces. But as it seemed difficult to ascertain what would, exactly, answer the Author's intention, it is humbly, apprehended the method of an Appendix is preferable. The asterisks shew where the subject is left off; & the references to the Appendix, are included in Brackets.*[425]

The essay is paginated 171–180, and "The Appendix to No. 21" pages 207 [208 is blank]–213, and signed in his large hand "Benjamin Smith Barton." The essay was never completed. He discoursed in circles about causes and announced that he had an idea about treatment, but did not give it. His Appendix I (p. 209), which goes with p. 175, states that after he began his paper, he learned of the works of Blumenbach and Saussure,[426] though they did not know the causes. He had been eagerly reading on the topic, for he cites on page 172 [Cornelius De Pauw] *Recherches Philosophiques sur les Américains*, probably the Berlin edition of 1768, which contained a dissertation reply by Antoine Joseph Pernetty (1716–1807). He also cited Lionel Wafer, *A New Voyage and Description of the Isthmus of America* (London, 1702); Erasmus Darwin, possibly *Experiments, on Animal Fluids* (London, 1775); and on his following page, 173, Samuel Stanhope Smith's *Causes of the Variety*, the work he was to publish with his own introduction and comments in Edinburgh (1788). He was disappointed that Smith had so little to say on albinos. On page 177 he cited Strahlenberg's description of northern and eastern parts of Europe and Asia, the English edition.[427] Our youthful author distinguished albinism from leucodermia, "a spurious disease." His explanation of the color of the negro was that it was a secretion guided by the same laws as bile, semen, etc.

Had he intended the paper as a thesis for his degree, then found he could not, in the time he had, comprehend sufficiently all the literature at hand? Was his desire to be thorough one

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424 Craig, *Royal College*, 294.

425 Royal Medical Society Edinburgh. "Dissertation XXII" inked on back, but numbered XXI on p. 171. It measures 27 × 17½ inches: Photocopy in Barton, miscellaneous papers, APS.

426 Barton wrote to Blumenbach, whose thesis *De generis humani varietate nativa libra* (Göttingen, 1776) declared his early interest in natural history, anthropology, and comparative anatomy. A later edition (Göttingen, 1795) is in Barton's library. Horace Bénédict de Saussure (1740–1799), Geneva geologist, botanist, and author of *Voyages dans les Alpes* (Geneva, 1779–1796, 4 vols.) made observations on the natives of various regions. This is also in Barton's library, APS.

427 Philip Johan Strahlenberg (or Stralenberg), *An histori-geographical description of the north and eastern part of Europe and Asia; but more particularly of Russia, Siberia, and Great Tartary both in their ancient and modern state: together with an entire new polyglot table of the dialects of 32 Tartarian nations...Faithfully translated into English.* (London, 1736).

trait that would influence his leaving unfinished his greater projects? He had discoursed on the change of color in a negro woman before The Royal Medical Society.

Dissertation XXIII on the American Indian, in the archives of Royal Medical Society of Edinburgh (1788-1789) pp. 1, 3-17, demonstrates that Barton had been particularly reading the recent publication of the principal of the University, Rev. William Robertson (1721-1793), *History of America* (London, 1788), with a perceptive eye. He criticized his principal, with little discretion, as influenced by Buffon and De Pauw, and as "more deficient in a knowledge of the Science of Nature," and found it full of errors despite its eloquence. Abbé Raynal,[428] and "the elegant Principal of this University," used too much imagination in writing of America, never having been there. He also criticized accounts of Jesuits and Buccaneers, who deride natives and give no natural history of man. Banks, Daniel Solander, the Forsters, and Anders Sparrman were "inflamed by noblest enthusiasm." He asked tolerance for his youthful frankness: he certainly was bold in his condemnation of early writers, and very confident from his own direct observations.

One wonders how much his frankness affected his association with the University administration, particularly Principal Robertson! Barton listed the beliefs of early writers: that America was inhabited by Orangoutangs, by Carthaginians, by Danish, Welch, and Irish; that James Adair and André Thevet believed the pre-history source of Americans had been the Israelites. Barton himself concurred with Edward Berewood (ca. 1565-1613), author of *Enquiries touching the Diversity of Languages and Religions through the chiefe Parts of the World* (London, 1614), that Tartars from Asia were the first inhabitants. Cook and Vitus Behring, he wrote, confirmed this hypothesis. The argument: all the American Indian nations concurred that their appearance, manners, and customs, were Tartarian characters; and their language bore a similarity. He diverged, however, to discuss the "esquimauxs" of whom, having read Samuel Hearn's account of his trip to Hudson's Bay and "the northern Ocean" in 1769-1772, he thinks little. They are degenerate in appearance.

With characteristic confidence, having been among native Americans, he could write that others view natural history as effects only. "But, as I shall not hesitate to assign causes where I can; and, rather than appear dull, I shall hazard conjectures, when the nature of the subject will not admit certainty." The essay ends abruptly with the statement that Smith's *Essay* will soon appear, and he will leave causes to him. This last statement suggests that this dissertation really preceded Number XXII. It evidently had not met the requirement for a medical thesis.

Back in Philadelphia, notes for this essay were probably the basis for his delivery of the annual lecture before the American Philosophical Society in University Hall 23 February 1799, the title "The Natural History of Indian Tribes of North America."[429]

Still hoping to publish Bartram's *Travels*, Barton wrote again from Edinburgh on 19 February 1788 to William Bartram, Botanist, at Kingsessing near Philadelphia:

> *Sir;—I wrote to you, if I recollect, in August last; and I presume you have long since received my letter:—I am very anxious to receive an answer to it as soon as you can spare a little time from your more important business; which I hope may be sometime before I leave this place, in September next:*
>
> *I informed you in that letter that I was extreemly anxious to see your Journal, which I read with so much pleasure as well as information, in print, and I mentioned to you a plan for its publication which I wished you to consider: how far you may agree to that plan, I will not take upon me to say,*

428 Guillaume Thomas François Raynal (1713-1796), French historian, sometime Jesuit, author of *Histoire Philosophique*, 10 vols. (Geneva 1781), which was translated into English by J. O. Justamond, 8 vols. (London, 1781). One section devoted to the "Revolution in America" was separately published that same year in London, as was Thomas Paine's letter of criticism of his mistakes. Lord, *Universal Biography*.

429 APS "Minutes," 280.

but this I assure you that I am induced to mention it to you almost wholly from a desire to rescue from obscurity (you will pardon the phrase) a work which could not fail to be of very essential benefit to the cause of Science.—I need hardly inform you again that Natural History and Botany are the fashionable and favourite studies of the polite as well as of the learned part of Europe: whatever regards the Natural History of America is particularly sought after; and every thing that tends in the least to reflect any light on this interesting subject is purchased and read with avidity. I am therefore persuaded, that the publication of your Journals, and of your manuscript Catalogue and Description of American trees, &c., would be considered a very valuable present to the literary world; and if they were transmitted to me I shoud engage in the publication of them on the terms I formerly proposed to you viz, that I should print them and have the drawings which are to accompany them engraved at my own expense, and allow you one half of the proffits arising from their sale so that let the fate of the work be what it may you are at no expense whatever.—

Barton then with confidence laid out his plans for the near future, plans that did not materialize. His mention of Göttingen, renowned as a center of *Naturphilosphie*,[430] has confused many of his biographers.

I shall take my degree of M.D. in September next and shall immediately afterwards proceed to Germany, where I shall spend the winter and part of the following season principally at Göttingen, that I may receive every possible advantage in Botany and Natural History from Dr. Murray[431] *and the other celebrated professors in that university. So that if you agree to my proposals it will be necessary that I should receive the manuscripts; etc, by the middle of August.—It would, in this case, be my intention to publish the work in Germany, where the spirit of Natural History is greater than in any other part of Europe.—Whether or not you find it convenient to agree to these proposals you will believe me that nothing is, or ever was, more distant from* [my] *thoughts than a design to palm myself with the discoveries of others.*

I have for some time past been engaged in a Botanical work which is now in the press at this place entitled 'Florula Pennsylvanica.' I believe it will be published about the middle of March, when I shall not forget to send you a copy of it.

Reference to "Florula Pennsylvanica" as being in press in February 1788 is of interest. It demonstrates the ambition of a young author who was to learn that he needed much more background as well as time and money to complete such a work. The printed sheets have remained a puzzle. Did Barton take those sheets that were printed by the time he left Edinburgh to Philadelphia with him? They are surely a part of *Prodromus Flora Pennsylvanica*, which survives among his papers, undated, but identified as "Q. pp. 115-122," along with additions made in about 1806. Did he leave copies in England, and were these the publication about which Muhlenberg lamented to William Baldwin in 1813, "Dr. Barton, it seems, has published the first 8 classes of his Flora,—but has sent all the copies to England;

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430 Timothy Lenoir, "Göttingen School and the development of Transcendental Naturphilosophie in the Romantic Era," *Stud. Hist. Biol. 5* (1981): 111-205. Samuel Taylor Coleridge spent the better part of a year at the University.

431 Johann Andreas Murray (1740-1791) born in Stockholm, died in Göttingen. Edited *Systema Vegetabilium, ed. 14* (Göttingen, 1784).

and none are left for the American Botanists, who want a Flora most,"[432] a misunderstanding of the time of printing? Barton proceeded in his letter to Bartram with the latest botanical news: "The great work of Sir Joseph Banks, it is said, will shortly make its appearance; but I am sorry to inform you that there will be so small a number of copies printed, and they will be so prodigiously expensive, that few persons will have it in their power to purchase it." The reference was to publication of the plants collected by Banks and Solander on Captain Cook's first voyage round the world, and their illustrations by the gifted Scot, Sidney Parkinson (ca. 1745–1771). Banks did not carry through with the project. It is difficult to believe that he was still persisting in his plans for publication as late as 1788. His abilities did not lie in the field of close meticulous work, and altogether he published very little. Perhaps it was fresh enthusiasm engendered by his employment of Jonas Dryander, but Dryander with his cataloging aptitudes in the library did not enthuse as had Solander in matters of plant relationships. Although there was an edition with illustrations in black-and-white in 1900–1905, it was not until 1981 that Parkinson's beautiful drawings began to appear in elegant folios produced by the British Museum (Natural History).

"A very important work entitled 'Flora Peruviensis' has been in the press some time; and will probably be published in the course of the present year." Ruiz and Pavón were actually still in Peru and Chile; their *Prodromus* did not appear until 1794, and the *Flora* began to appear in 1798. Barton then touched on a difference conspicuous at that time between his and European governments: "All Europe is alive to these studies:—Under the patronage of monarchs, they grow, and acquire a permanent vigour;—they afford even to the ambitious politician, and the indolent petit maitre an interval of content and of amusement." Then with a promise as was his custom, even if he could not carry through, Barton continued: "If there is anything which you may want from Europe such as any of the new publications I shall be happy to forward them to you if you will only be at the trouble of letting me know what they are.—Meanwhile I have the pleasure to subscribe myself your most obedient and obliged humble servant, &c, Benjamin Smith Barton." In his postscript he went back to the original purpose of the letter: "[If] you are averse to the publication of both your Jour and your Catalogue either of them separately will be an exceptable present to the world."[433]

The question foremost in our minds is how Barton expected to finance *at his own expense* the publication of the text and engravings: Was it the expectation of getting some patronage for the project? Money he had borrowed? Did Bartram consult William Barton about the financial end, and his brother discouraged the plan? Or did Bartram, gentle soul, not wish to antagonize Enoch Story further? In an undated letter Bartram responded:

> *...In your last Letter you mention another addition of Your Work in Publication.*[434] *Be so good as to send me one as soon as convenient.*
>
> *You greatly oblige me in interesting yourselfe in forwarding your publication of my Travels. I have not yet determined on it & the copy remains yet in imperfect Embryo. I am doubtful of its consiquence in respect to publicke benefit. The Narrative might afford some amusement & serve to Kill time with the inquisitive of all Denominations. I am about the Catalogue of the most curious Vegetable discovered during these Travels. When you left us I had some thoughts of revisiting those regions & by that means compleat my Travels. But a misfortune prevented it by which I broke my Leg & was near loosing my life in consequence of it. I fell near 20 feet from a Cypress Tree in the Garden where I was gathering seeds. I am recovered so as to be able to walk pretty well tho it being a compound*

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432 Darlington, *Baldwin*, 78.

433 Harper, "Proposals," 34.

434 A hoped-for publication of Part II of *Observations* that Barton had mentioned as "a new edition" in his letter of 26 August 1787.

fracture & as near as possible to the Ankle joint, which is Yet stiff & troublesome after much walking.

With sentiments of the highest esteem I sincerely Rejoice with your wharmest friends in your advancement in Reputation to which I wish I knew how to contribute in the least degree.

William Bartram

P.S. I hope you won't neglect me, with respect to Litterary favours.[435]

Ten days later, on 29 February 1788, Barton resigned from the presidency of the Natural History Society, as given in its minutes, but not from the organization.[436] In April he was dropped from membership in the Speculative Society. He was still in Edinburgh on 10 May, for that was when he transcribed William Jameson's notes from Professor Walker. He was, however, in Paris by 8 July 1788, as Jefferson wrote from there to John B. Cutting in London.[437] But did Barton meet Jefferson? One must infer not, if Barton's letter of 26 July 1790 to Jefferson with his *Proposal* for publication on antiquities that opened with "unknown as I am to you" is indeed a fact. Barton may have hoped for a visit with the American diplomat to seek financial encouragement for his publishing ventures, but instead he succeeded in obtaining a loan through a letter. Was that the sum to which in 1796 Jefferson magnanimously referred in a letter of 10 October: "The little matter of money which you mention was never worth recollection. It was so little importance that I do not remember what it was"? He then suggested that Barton put whatever the sum into procuring for him "good pamphlets which come out."[438]

As a record, Barton wrote:

When I left Paris the 24th much fine fruit of various kinds, Pease there plentiful, cherries white like Ribes, the white very fine, goubers, abricots, remarkably fine, little plumbs, fresh almonds, a poor fruit, Hazel-nuts, or Filberts, did not eat them. The cherries came in a good while before the almonds & abricots; so did the currants. The French gooseberries not in size, to be compared to it. Those I saw at Darrew in England. No grapes in Paris, now on the road; but the green grapes on the road about the size of young Pease. In Paris I saw the fresh almonds at least two full weeks before I left it.[439]

Here Barton shows the early interest he shared with William Bartram in a calendar of fruiting.

Did his dating his presentation copy of his *Observations* (1787) to "Dr. [John] Playfair, September 3rd 1788" mean he was now back in Edinburgh? Had he returned hopeful of obtaining his degree, even though he brought back mere promises of some future repayment of the money he still owed the Royal Medical Society? Had "Dissertation XXII" on albinos and "Dissertation XXIII (1788–89)" on North American Indians been submitted for a degree, but rejected as incomplete and not containing sufficient medical information? Had he floundered, embarrassed during oral examination before hostile faculty members? Consider the blow to the ego of the once hailed promising pupil, to the pride of the overconfident

435 Rough draft, Jane Loring Gray, *Autographs*, vol. 1, f. 104a, HUH.

436 Bell, "Barton," 202.

437 Lipscomb and Berg, *Jefferson* 10: 366.

438 Barton papers, APS.

439 Barton, "Fragments," a form of commonplace book in which he kept notes for Part II of *Fragments* (1799), but which did not appear. As late as 1806 in "Botanical Notes No. 1" he reminded himself, "Note this for my fragments new edition." Barton papers, APS.

young American who now had this failure added to the stigma of having taken money to which he had no right.

How had the principal of the University, Rev. William Robertson, reacted to this pupil's criticism of his *History of America*? Was Robertson one of the professors whose conduct was, in W. P. C. Barton's words "as he conceived it, reprehensible," a cause of Barton's having hoped to take his degree at Göttingen? Decidedly unpleasant must have been the meeting of the wayward culprit who had dared to belittle the classic work of the older historian, the head of the University. Was Dr. Andrew Duncan, the elder, who had signed his Harveian prize as Secretary of the Royal Medical Society, then withheld it, the other unfriendly professor mentioned by W. P. C. Barton?[440]

Soon Barton was on his way south again from Edinburgh to London. While aboard the *Apollo* on his way home, he remembered an anecdote he had heard while traveling in the mail coach from Newcastle-upon-Tyne in the month of September 1788. A passenger told him of a bed of moss that had been opened to reveal a man in erect position, "flesh on," and but "little emaciated" with skin so hard a knife could not penetrate it.[441] The man had slipped into the bed when standing on it. Three months later Barton was in Amsterdam whence he wrote Bartram 13 December 1788: "I have received your very friendly and valuable letter containing an account of the Pyramidal Eminences in East-Florida, &c." In return he sent "two or three literary productions" in care of his brother William.

> *I shall return to London in a few days, & shall then proceed with the remaining parts of my work, copies of which I shall be proud & happy to send you. Some sheets of the work are already printed off; particularly that part wh*[ich] *you transmitted to me...I hope, at some future day, should it please God to grant me health & life, to publish a History of America. With this view I am forming a correspondence with some of the first literary characters in Spain, Portugal, &c.—I am also making a collection of books relative to America, & have here also much assistance.*

Sheets of what work? On Indians, on pyramidal eminences, a flora? Very shortly after he arrived back in Philadelphia he published and distributed his *Proposals for printing by Subscription...various Remains of Antiquity*. Was his contact in Portugal with the president of the newly founded Lisbon Academy, Abbé Corrêa da Serra, who was later to come to Philadelphia? There is the suggestion lurking between the lines here that Barton, for the time being, had given up his goal of becoming a physician to enter another field, but from what follows he had not given up the idea of winning a degree, nor his interest in botany. He included in his letter to Bartram a request:

> *The enclosed is a Series of Questions to which your answers will prove a valuable acquisition to Science...I can easily procure you seeds of many of the curious, beautiful, and valuable species of East-India plants: some of them, I am confident, will flourish in your garden, where I hope to see them on my return to America.*
>
> *Could you by any means favour me with a drawing,—dried specimens,—and description of the Franklinia Alatamaha ;—of its place of growth,—time of flowering, &c.—I will not conceal my motives for this request:—I mean to visit Upsal, the place, where Linnaeus taught, and still the seat of Botanical Science, under the presidency of Charles Thunburgh ;—and as it is customary to publish on some subject relative to Botany, I would wish, with*

440 W. P. C. Barton, *Elements*, 17.

441 Commonplace Book CP 33, HSP.

> *your assistance and permission, to publish on the Franklinia:*[442] *or if you are unwilling to grant me this request, perhaps, you may have less objection to drawings, &c. of some other plant which you have discovered, growing in America;—such as Xanthorhiza Simplicissima—or some there in your Catalogue.*

He suggested that Bartram send his reply through his brother William and in care of Mr. Charles Dilly, Bookseller in London. On an enclosed list he sent further "Queries":

> *In what particular part or parts, of America did you meet with the Artificial Mounts or Eminences, of which you mention in your Journal? What were the general forms, and hights of these Mounts? For what purpose do you suppose they were erected? Have you in any part of your Travels, met with any Fortifications, such as I have described in my work? or with any other Vestiges of Antiquity?*[443]

The rest of the queries disappeared until about 1850, but turned up in Mobile, Alabama, "amongst the waste paper used as stowage, in a box of books, from some northern city" that had been sent to Dr. Samuel George Morton (1799-1851). "Were the tribes," Barton queried, "familiar with the Mississippi River? When did they cross it?" Here he was harking back to the origins of the Indians, and whence they came. "Did you observe any rock paintings?" Which tribes were the "most polished in their religion, in their manners, in their language," etc. "Did you see painting of the body?" What plant was used (as *Sanguinaria canadensis* by the northern Indians)? "Did you observe any large teeth or bones, similar to those which are found near the Ohio?" And so on.

One year later in his letter of answers dated Philadelphia 15 December 1789, Bartram reassured Barton that his "observations and conjectures" were made "without reserve" and that Barton would be free to use them. "My weakness of sight, I hope, will plead for me, I assure you I have been obliged to write the greater part of this with my eyes shut, and that with pain."[444] Barton's precise "Queries," Bartram's often detailed answers, and E. G. Squier's annotations to both were not, however, made public until 1853.[445]

Editor Squier recorded what he knew of the provenance of the questionnaire (p. 4):

> *The history of this MS. is unknown, beyond that it was sent to Dr. Morton from Mobile, by a gentleman whose name is forgotten, but who received it amongst the waste paper used as stowage, in a box of books, from some northern city. It contains nothing to indicate at whose suggestion it was written, or to whom it originally belonged.—The questions were evidently framed by a man of learning and research, who had paid much attention to the subject of American Archeology: and as Dr. B. S. Barton, at one time Vice President of the Philosophical Society of Philadelphia, and from 1789 to 1810 an active promoter of National Science in that city, in his Memoir on the Origin of the American Nations, p. 46, refers to a MS. by Bartram, on these subjects, in his possession, it can scarcely be doubted that*

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442 For Bartram's earlier (?) striking *Franklinia* watercolor in the British Museum, see Frontispiece in Ewan, *Bartram*.

443 Bartram papers I: 5, HSP.

444 See Harper, *Bartram's Travels*, p. 407. Bartram's problem with his eyes may have resulted from an illness suffered while in Alabama. He was almost blind for a time.

445 E. G. Squier, "William Bartram, Observations on the Creek and Cherokee Indians, 1789, edited with prefatory and supplementary notes," *Trans. Amer. Ethnolog. Soc.* 3 (1853): 1-81.

he was the author of the inquiries submitted to Bartram, and the original proprietor of the MS. in question.

Dr. Morton of Philadelphia, who was to have provided an introduction to the manuscript and how he came by it, died 15 May 1851. An undoubted reference to the long-lost manuscript appears as a footnote in Barton's *New Views* (1797), page xlvi: "on the authority of my friend Mr. Wm. Bartram. M.S. *penes* me." Although it is seldom mentioned in the burgeoning Bartram literature, his answers to Barton importantly supplement his commentary in his *Travels* (1791) on the Southeastern Indians.

From Barton's request, we surmise his inexperience led him to believe that by sponsoring a paper on *Franklinia*, based on Bartram's discoveries, into publication he was making the information his own. But then how many modern dissertations are mere researches into material whose source is barely recognized. Bartram's wealth of information had not yet reached publication, Barton would be dealing with truly original material, and he would, surely, have credited the source of his knowledge.

This is the only mention of Barton's desire to go to Uppsala for a degree, that University with a more sympathetic interest in botanical subjects for medical theses. From Amsterdam he surely made a visit to the University in Leiden, however unrewarding. There can be no doubt that he browsed in bookshops wherever he traveled. Back in London, he visited Dr. John Hunter from 10 February 1789 until the 14th, presenting a letter from Dr. Shippen and "drawings of Ohio bones of the animal incognitum." He had lectured on the bones before the Edinburgh Natural History Society, and would publish on them in "Facts, Observations, and Conjectures" in *Philadelphia Medical and Physical Journal* in March of 1806.

For the rest of Barton's stay in Britain we must read with caution Barton's primary biographer, the nephew closest to his interests, William P. C. Barton. He stated that after Barton's death he had been denied access to his letters and papers for use when writing the eulogy he delivered before the Philadelphia Medical Society on 24 February 1816. This restriction may have been intended only until the manuscripts had been sorted and some sensitive documents removed. The nephew, grateful for the time he had spent with his uncle in field and laboratory, yet cognizant of his lack of generosity to other naturalists in his later years, recognized him as an exceptional person, one who had surmounted his early dire poverty and misfortunes, one from whom he had learned much, and for whom he had made a number of drawings. Conscious that he was describing the life of a controversial and not universally admired person to the many who knew him well in the halls of the University, or on the streets of Philadelphia, he portrayed him from different perspectives: as the kind and generous man he would like to have remembered and honored, and the middle-aged man with the jarring voice, sometimes irritable disposition, and a noticeable haughtiness of demeanor. After contemplating the surviving original material, one reads the nephew's portrait with caution; there is so much shadow where we would hope for light, so much material hidden between the lines.

In the nephew's account it appears that on 2 February 1789 Barton wrote to his brother William that he now chose to obtain his degree from Göttingen. Audience and readers have been led to believe it was because two of his professors at Edinburgh had acted in an unfriendly manner. One had not shown him "the slightest attention," and "the conduct of the other was, *as he conceived*, reprehensible for a similar cause."[446]

Barton had not written his brother William the truth of why he would not get his degree at Edinburgh, but substituted the news that "some favorable proposals" had been made that he settle in Russia. This was the period when Catherine the Great was making a brave attempt to link Russia more closely with the western world. She had sponsored Peter Simon Pallas in pursuing her great interest in languages resulting in his *Comparative Lexicons*. Washington,

446 W. P. C. Barton, *Elements*, 17.

Franklin, and Jefferson had been solicited by her for information on American Indian languages. Barton must surely have been contacted through a British connection or Russian visitor.[447] In 1789, the same year in which Franklin was elected to the society, Barton was made a member of the Russian Academy of Science. Only a part of William's answer to Barton survives. William had addressed the letter to the care of Mr. Elliott & Ray, Booksellers, Edinburgh, "by packet," but it had been re-addressed "c/o Messers. Kay & Co. No 332 Strand, London."

> *The American Philosophical Society wishes you to be a Member; and I have the pleasure to tell you, that, at the last Election of Members* [16 January 1789] *in the Philosophical Society, you were unanimously chosen. Dr. Shippen pronouncing your Eulogium on the Occasion. Dr.* [Thomas] *Pole*[448] *of London was elected the same Evening—I wish, if you should return by the way of London, you would call on him—I would, however, advise you to take your passage from Scotland, for New York or this city, and contract to pay your passage, here—*
>
> *I have this afternoon bespoke a bill of exchange of Mrs. Huston or Hewson (widow of the celebrated anatomist) for as much sterling, as £50 curr*[enc]*y will perchase I expect to get it in time, to morrow to go by the packet which is to sail from n. york three days (hence) but if any thing should disappoint my sending it by this* [conveyance] *it shall undoubtedly be sent by the packet which will leave (New York) by the beginning of next month—I mention this, lest any (unforseen) accident <u>should</u> occasion a disappointment—The bill will probably be drawn three* [ways?] *to the fit (i.e. three of the <u>same tenor & date</u>,) you will, therefore, present or negotiate the first that shall come to hand, the others being of no use—This is taken notice of, lest, by not attending to the Dates, you should mistake them for different drafts. Genl Washington is president of the United States, and Mr. Adams (most probably...*[<u>torn</u>]
>
> *You mention in your last letter to me, that you have some thoughts of publishing some medical work—Do not, I beseech you, engage in any fresh pursuits, or <u>any thing whatever</u> which may be a Means of retarding your Return.—W. B.*[449]

Barton was still clinging to the hope that authorship, or editing and publishing, this time perhaps an American adaptation of Cullen's recently published *Treatise of the Materia Medica* (Edinburgh, March 1789, 2 vols.), would aid his financial difficulties and redeem his good name. Yet he had not found a patron for his activities, as had John Bartram, "King's Botanist," or the upstart William Young, "Queen's botanist," nor William Bartram with Dr. John Fothergill. William Barton was feeling a good deal of apprehension now about his brother's financial ventures. It may have been the missing sentences of this letter that so wounded the young aspirant's sensitive feelings. The lost letter of 13 February 1789, mentioned below, in which he replied to William may have answered some of the questions that still plague us. Some of the problems and facts are suggested in William's next letter from Philadelphia, that of 24 April 1789:

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447 E. D. Markov, "Russian relations," 562.

448 Dr. Thomas Pole (1753–1829), author of *Anatomical Institutes* (London, 1790). *DNB*; APS "Minutes," 175, 205.

449 Barton papers, APS. Dr. Wm. Hewson (1739–1774). Morton, *Medical Bibliography*, nos. 79, 863, 1162.

My dear Brother,

I have this moment received your letter by Mr. Clarkson (dated 13th Feby); and, having an opportunity of answering it by the Apollo, which will [sail] *in two days from this time I now take up my pen for that purpose.*

It gives me extreme pain, that your letter should be couched in such terms of Displeasure—Surely, my dear Brother, you cannot conceive on serious Reflection, that I have been actuated by any other motive, than a sincere and anxious desire of promoting your welfare. If I have taken the liberty of offering you my advice, it is what I thought was my Duty; nor could I have supposed that, in doing so, I should have hurt your Feelings—God knows! I have no other desire in any thing I have said, than a most disinterested wish for your Happiness; and I presumed that five and thirty years acquaintance with the World justified me, in freely speaking my sentiments to a younger Brother, whom I sincerely love, on his entering into life—Indeed, I place so much confidence in your prudence and good sense, as well as your Affection for me, that I am persuaded you will, on mature Consideration, feel a Conviction of my Esteem & Friendship for you. You suppose I think you are 'idle', and that you 'neglect' your Medical Pursuits—Believe me, I did not entertain any such Opinion: but, I candidly confess, I was apprehensive that your Engagements in other Concerns might unavoidably divert a greater portion of your Time from the immediate Calls of your profession, than you were aware of—If I was mistaken in that respect, you must ascribe my fears to my Zeal for your Prosperity; and not to my Suspicion of your Imprudence. You are certainly right in fulfilling your Engagements to the Public; and I am glad to hear, that your book is nearly completed, as I am sure it will do you Credit:—After this, 'to oblige me' (you say), you will publish no more—I thank you for your readiness to oblige me, which I am confident proceeds from your Regards, but I, nevertheless, wish you to understand, that it is not my desire that you should sacrifice your own Judgment to my Opinion; as I may not, perhaps, be a competent Judge of what may be proper and advisable, under the existing Circumstances of your Prospects.—

With Regard to your Expectations of Success here, I have already spoken in the inclosed Letter—On this Occasion, I may also be mistaken: but, of one thing I have no doubt whatever—which is, that, either in this City or New York, your Prospects are better than any you can have in Europe—Your Abilities and Diligence will assuredly bring you forward in a Country, where, tho' we have many of your Profession, there are comparatively few of any Eminence or literary Talents—You have many friends in this City: and, tho' you pronounce Friendship to be 'but a Name', be assured, you will find at least as great a Portion of it in this Country, as in any other whatever.—As to your remaining in America—that is a Matter of which you yourself will be the most proper Judge; and in which You will exercise your own free Agency and Discretion.—You say an unfortunate Pride will not suffer You to remain an indolent & obscured Mortal—I am glad you are conscious, that pride is an 'unfortunate' Quality: it is, truly, an unfortunate Attendent on any Man; at the same time the Emulation & a well-directed Ambition are both virtuous and laudable. Certain I am, that your judgment and goodness of Heart will lead You to abandon the one, and to be influenced solely by the others—I must intreat of You to discard any Thing like Resentment against our Uncle David—He is really a good Man altho' he has Frailties: and I am persuaded; Not-with standing his parsimony, that he entertains a sincere Esteem for You.

The inclosed Letter was designed to go by the last Packet; but I, unluckily, missed the Post-day to New York. The Arrangements that have been made, for enabling You to return, will, I hope, be fully satisfactory to you. Since writing that Letter, I have had one from our Mother [Sarah De Normandie Barton] *in which is this passage—'The forty Guineas shall be ready in an hour after he' (meaning You) 'arrive; and if You' (meaning me) 'think proper, you may make use of his' (referring to Dr. De Normandie's) 'Name, for the Payment. He' (Dr. De Normandie) 'says Mr. Dilly is a monied Man, & will let Benny have that sum at once, when he can be assured of being repaid; so that he may draw upon You, my brother or myself, at a week or 10 days Notice after his Arrival.' These are Mrs. Barton's express words, in her Letter to me, which is dated the 20th April— The Character and Fortune of Dr. De Normandie, and the Punctuality of our Mother, do not, therefore, leave the least doubt that your Draft, either upon the Doctor, Mrs. Barton, or myself will be strictly honored: and I cannot but suppose, that your friend Mr. Dilly will so far oblige You as to advance the Money, for so short a time, as will be necessary. If there prove to be any passenger in the Apollo, who will take Charge of the Magazines,*[450] *they shall be sent.—*

Dr. Buchannan[451] *has taken his degree of M.D. in our University, and has since commenced Author*[ship?]*—He is well settled at Baltimore; our Relation, Dr. Walker,*[452] *is getting into good practice in Virginia.—*

Apl. 25th. Since I wrote the foregoing, I have been forming a plan to facilitate your Return, which I think will answer extremely well—The ship Apollo (which carries this) is a fine new Vessel, belonging to Mess(rs) Rundle & Murgatroyd of this City; and goes consigned to Mr. Thomas Dickenson, junr. American Square, London. The owners inform me, that this ship will sail from London, on her return hither, the 10th of July: and, on my having engaged to them, that the passage Money (wch, including the Sea-stores, they say will be 30 guineas) shall be paid by Mrs Barton, immediately on your Arrival here, they will give orders to the Master, Capt. Billings, to take you on board—You will, therefore, find no difficulty in getting accommodated with the remainder of the money. This ship will afford you so convenient an Opportunity of returning, that I have no doubt that you will embrace it—the time of her sailing will not only suit you; but will enable her to arrive before the Hurricane season.—God send you a good passage!

If you will send to Mr. Tho. Dickenson, you will get 12 numbers of the Magazine.—Your letters shall be taken Care of.—

Your good sister Betsey [Esther Zantzinger] *joins in love to You—we are all well. God bless you, Dear Benny, yr ever affecte Brother W. Barton.*

[Postscript.] *I send with the Magazine a Newspaper containg. the Addresses presented to that truly great & excellent Man, Genl. Washington,*

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450 Surely volumes of the *Transactions of the American Philosophical Society* mentioned by Barton.

451 George Buchanan (1763–1808), a native of Baltimore, had apprenticed under Dr. C. F. Wissenthal in Baltimore and then taken his M.B. degree at the University of Pennsylvania in 1785. After three years in Edinburgh, where he knew Barton, he returned to earn his degree under Shippen. His poor health forced him in 1804 to give up practice in Baltimore. Returning to Philadelphia in 1806, he was appointed physician for the diseased poor by Governor Thomas McKean, who was his father-in-law. Dr. Rush protested the appointment, since Buchanan was the twelfth member of his family to be appointed by the governor. Buchanan died of yellow fever. His thesis had been on respiratory problems (Austin, *Imprints*, 345). Kelly, *Cyclopedia I*: 125. Butterfield, *Rush*, 936.

452 Dr. James Walker, brother of Martha Walker, who married Richard Peters Barton, Barton's brother.

on his arrival in this City, in consequence of his Appointment to the first office in the American Empire. His answers discover the greatness of his Soul & goodness of his Heart.[453]

William was now aware of Barton's having neglected his medical studies in pursuit of publication—he may have learned by this time of the failure to obtain his medical degree at Edinburgh. In the missing letter, Barton had probably expressed an apprehension of his being accepted in practice in Philadelphia. That he had met with a change in attitude toward himself on the part of Edinburgh professors shows in his cynicism of the meaning of friendship. William's brotherly advice exhibits strength and affection and must surely have contributed to Barton's determination to strive again for success. About this time their uncle David Rittenhouse had the families of his two daughters to support, and that may have been the reason he did not contribute at this crucial time.

"Our mother" was Sarah De Normandie Barton, daughter of Dr. John H. De Normandie of Bristol, Pennsylvania, the second wife of Rev. Thomas Barton. Barton was already indebted to Mr. Dilly, but with Dr. De Normandie and William as co-signers of the note, he would probably have obliged, but that became unnecessary when William laid forth his alternate plan assuring Barton's passage homeward. This letter bears witness to the strength of family support among the Bartons for each other through the years, support Barton also found on his return to Philadelphia from his uncle David Rittenhouse, who had known him as a good companion on the western trip; from Provost Andrews, who had known him as an alert conscientious student at York Academy; from Dr. William Smith, friend and advisor of his father; and from Dr. Shippen with whom he had apprenticed. Their early confidence in his abilities held firm in their support for his appointments in the University. Although his misconduct at Edinburgh had cast a pall over his conscience and affected some of his associations, he was able to face the future with renewed determination.

The only fixed residence we have for Barton while in London was for some of his last days. It appears on a letter dated 6 June 1789, "care of Miss Robinson's, No. 5 Jews-Walk, Bethnell Green," and was from G. William West,[454] the letter suggesting they had met earlier. Thomas Paine, author of *The Age of Reason* (Paris, 1794), etc., was then fifty-two years of age. Thirteen years after his departure from Philadelphia he had returned to England on 3 September 1787 on the *Piccadilly*, after his imprisonment in France. He may have hungered for news of the country he had tried so valiantly to encourage during the War for Independence. In a letter of 11 July 1778, Paine had offered to give Banks information on the Hessian Fly, which had invaded England with wheat arriving from the United States. West's letter to Barton reads:

London June 6th 1789

'Mr. Barton' Sir,

Mr. Payne (the author of Common Sense) called on me to Day, and expressed an Inclination to see you.—He has engaged to drink Tea with me at 6 o'clock next Wednesday Evening, I having promised to invite you, to my House, at the same Time.—Exclusive of the Pleasure I hope to have in your Company, I am happy in reflecting, that your meeting Mr. Payne may perhaps prove advantageous to yourself, as that Gentleman is acquainted with Sir J. Banks, and proposes to breakfast with him on Thursday Morning.—

453 Barton papers, APS.

454 A relative of Benjamin West, Pennsylvania born? A search of literature on Thomas Paine has not revealed West's identity.

Hoping to see you as early on Wednesday Evening, as your Business will permit, I am Sir Your Obdt Servant, G. Wm. West[455]

Was Paine cognizant of Barton's financial needs, and would he put in a word for him while attending one of Banks's legendary breakfasts?

During the last days in London, Barton enjoyed the hospitality of the family of a warm friend, Solomon de Leon, who had also been a medical pupil and a member of the Edinburgh Natural History Society. Leon had lived at St. Christopher's (St. Kitts) in the West Indies during 1787 and 1788, where sugar plantations ringed the slopes of a slumbering volcano called Mt. Misery. At that time, four thousand whites held twenty-six thousand Negroes. Leon had returned to London before going on to Leiden to earn his medical degree in 1790, his thesis on *Inflammation*. Writing to Barton from London in 1792, he promised to send a copy of his dissertation, and added:

All my family return their most sincere thanks for your very kind & friendly enquiries & they beg to be remembered to you—Abby sends her love to you she is by me while I write this—She says she will never marry without taking your advice—She is surprised at not receiving a line from you—There is hardly a day passes without her calling to mind some of your old tricks. Dear Barton write to me as often as your engagements will permit...[456]

How intriguing must have been the advice the young American gave the English young lady, and a sample of "his tricks" would embellish the picture we make of him. Was Abby Solomon's sister? As promised, Leon sent a copy of his thesis, which, since it was not natural history, Barton thought best to inscribe "For the Library of the Pennsylvania Hospital."

Barton's last professional contact in London, though the surviving letter lacks an address, would have been a visit from James Edward Smith. Barton expressed his regret at missing the visitor:

[July 21, 1789]

Dear Sir

I am very sorry that I was not at home when you called. and I would have waited on you, but for the pressure of time; for I leave London very soon in the morning. I greatly thank you for the valuable pamphlet & for a copy for M Corrêa. My same for the plants. These will now be too late for me; but they may be put into the hand of Mr Maclure who will see them delivered, for me, to a friend, Mr Samuel Price, who is sending some things to me in Philadelphia. I shall be truly happy to be of use to you in the U. States and it is highly probable, that I may, too frequently, call upon you to verify my specimens, &c. I am dear Sir with very great respect, Yours &c B. S. Barton Sunday night[457]

Smith's *Reliquiae Rudbeckiae* (London, 1789) had just been published in April-May in London, a folio of thirty-five pages illustrated with ninety-nine woodcuts by the Rudbecks. This was probably the "valuable pamphlet" Barton was to deliver to José Corrêa da Serra on his homeward voyage, presuming the *Apollo* would make a landfall in Portugal. Corrêa was one of the founders of the Lisbon Academy and is known to have been in Lisbon in 1788. So

455 Barton papers, APS.

456 Barton papers, APS.

457 Autograph collection, Botany Department, Natural History Museum, London.

he was probably there when Barton presented his paper on goiter, which was finally published in Lisbon in 1801. Barton was elected to the Academy and presented with a "diploma" of membership. This was the diploma to which William P. C. Barton alluded in his biographical essay.[458] Corrêa da Serra, who reached London in 1795, wrote to James Edward Smith on 23 March 1797 that he had a "diploma" from Lisbon Academy for Smith as well as copies of all the Academy's publications, if he wished them, and copies for Banks as well.[459] Corrêa was to come to the United States in 1812 as a representative of the Portuguese government, was keenly interested in natural history, visited Barton, and traveled widely in the northeast. Of this particular friend of Jefferson we shall say more later.

Barton left London on 22 July 1789 for Gravesend, embarking on the *Apollo* on the twenty-third.

Indians and Mounds

"The field I tread is so immense that I know not what part to cultivate first."
—Barton to Pennant, 1792

"The American Indian presented a challenge to scholars in Europe and the American colonies. The Indians possessed no written history, no satisfactory traditions of origin; they spoke some 1500 languages, were composed of about as many autonomous social units, presented many anatomical variations and great differences in their ways of life."[460] So Clark Wissler summarized the American natives, and he acknowledged Barton as the first "conspicuous individual" to attempt a synthesis of the archeology and anthropology of the American Indian.

The demise of the American Indian had been predicted by Pierre Eugéne du Simitière, native of Geneva, who arrived in New York in 1775 and in Philadelphia the following year. After serving as a curator for the American Philosophical Society from 1776 until 1781, in June of 1782 he opened the American Museum on Arch Street above Fourth, soliciting artifacts on the premise that the extinction of the Indian was inevitable. Du Simitière deserves more attention than he has received, but unfortunately his precise records were jumbled after they were received.[461]

Du Simitière's museum plan unfortunately died with him on 22 October 1784, but Peale's Museum soon began to fill its place. The Sullivan Expedition of 1779 to western Pennsylvania and New York, having laid waste the lands of the Iroquois, predicted "civilization or death would come to all American savages." William Bartram declared that the Indian "certainly stands in no need of European civilization."[462] But Jefferson wrote that "spiritous liquors, the small-pox, war, and an abridgement of territory, to a people who live principally on the spontaneous productions of nature, had committed terrible havock among them, which generation, under the obstacles opposed among them, was not likely to make good."[463]

From his childhood Barton had seen and had heard stories of the Indians, since his father had been a sympathetic minister to them in the vicinities of Lancaster, Carnaervon, and Pequot. Barton's trip into Ohio with Rittenhouse and the survey party along and across the Ohio River in 1785, with his visits to mounds and to the Indian village on Beaver River, had all stimulated his interest, and led to his contributions, which were published in *Columbia Magazine* in 1787 and 1788. Hard pressed for finances and anticipating great interest in the

458 W. P. C. Barton, *Elements*, 16.
459 J. E. Smith correspondence 3: 187, Linnean Society, London.
460 *Proc. Amer. Philos. Soc.* 86 (1942): 189, 190.
461 Hallowell, *Anthropology*, 130.
462 Bartram, *Travels*, 385.
463 Jefferson, *Notes*, 96.

British reading public, he published his "Account of several remarkable vestiges of an ancient date, which have been discovered in different parts of North America" as Part I of his *Observations* (London, 1787). "Some of these eminenses are of an amazing magnitude," he wrote: "particularly one near the mouth of a small river, called Grave Creek, which discharges itself into the Ohio, one hundred and six miles below the junction of the Alleghaney and Monaungahela. This stupendous eminence (the dimensions of which, I am sorry I cannot recollect) appear to be composed of huge quantities of earth, which have probably been procured from the adjacent ground; for it is situated on an extensive level..."[464] The walls sloping upwards and about ten feet high were overgrown with grasses and with trees about two feet in diameter, and Barton includes further description and a map of the mound.[465]

In his Commonplace Journal of June 1785, the account of his trip to the West with the Survey party, he described the Grave Creek area (presently Moundsville, West Virginia), and gave Andrew Porter's dimensions, which he did not have with him when he wrote *Observations*. The tumulus, he wrote there, was about one-half mile from the Ohio, and about the same north of the mouth of the Creek, with oaks growing on it. For "the most curious part" of *Observations*, the description of the remains near the rivers Ohio and Muskingum, Barton thanked Mr. William Tilton of Philadelphia, "who politely favoured him with the accurate plan and description." Although William Bartram had no doubt described to him Indian mounds that he had encountered on his southern travels, for Barton the mysterious mounds of Ohio captured his imagination and prompted his plans for the extended work that he was to announce in his *Proposal* to publish on Indian antiquities in 1789, soon after his arrival home from Edinburgh.

On Cutler's visit in 1789, Barton had listened attentively to his "friend the Reverend Manassah Cutler, a very respectable American botanist" who gave him details of trees growing on the summit of the "pyramid." Conservationists even then, the Ohio Company saved the trees, particularly the white oak "supposed to be more than one-hundred feet in height." "I believe," wrote Barton, "this tree still remains; as the directors of the Ohio Company would not permit any of the trees growing upon the mount to be felled, but, on the contrary, actuated by a liberal zeal for preserving this immense tumulus (which had long opposed the ravages of time) from the inroads of civilized art, have ordered the whole to be enclosed, and preserved unmolested."[466]

In *Observations* Barton told of Kalm's report on the finding of buried bricked well-walls by early Swedes in New Jersey, and of the stone wall "between four and five feet thick...at a depth of eight feet under ground" in the neighborhood of New York as reported to his father, Rev. Thomas Barton, by Rev. Peter Miller of Ephrata, Pennsylvania. He associated these reports with the mounds and was convinced "that various parts of the Northern Continent of the New World have formerly been inhabited by a people who had made considerable advances toward those arts which are almost inseparable from the dawn of Civil Society."[467] After rejecting a Welsh origin for the "antiquities" and considering similarities of monuments in Ireland and attributed to the Danes, he concluded in his work that the newly discovered "forts were built by the Danes; but I have not been able to learn at what period." They had, he figured, landed in Greenland, crossed to Labrador, then migrated in states to more promising land. "I am induced to think," he wrote, "that the Danes have contributed to the people of America; and that the Toltecas, or whatever nation it may have been, that constructed the eminences and fortifications in that Continent, were their descendents...nothing could obstruct the daring spirit which actuated them."[468] Barton had concluded at that time that after building the mounds as fortifications his Danes had migrated south to Mexico where they were known

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464 Barton, *Observations*, 18.

465 Barton, *Observations*, 31.

466 MSS of 6 pp., HSP. Perhaps for his planned "American Antiquities."

467 Barton, *Observations*, 39.

468 Barton, *Observations*, 65.

as Toltecs, "fair-skinned," and "moundbuilders" (even though the Mexican pyramids are flat-topped).[469] Ten years later in *New Views*, he rejected his Dane-Toltec theory as rash since he had now been studying Indian languages.

The aboriginal earthworks of "Muskingum" [Marietta], Ohio, the first to be surveyed in detail, had been announced in newspaper accounts reported by the survey party of 1785, often highly exaggerated as to complexity of structure. Their discovery came to be mistakenly credited to Manasseh Cutler and General Rufus Putnam, although Cutler did not arrive at Marietta until August 1788. Cutler had ingeniously tried to verify the age of the mounds by counting tree rings of some of the trees growing on the mounds. From 463 rings for one tree he calculated that the mounds dated from the fourteenth century, thus demonstrating to his satisfaction that the contemporary Indians had not been the builders. Mr. J. Filson (ca. 1747-1788),[470] explorer and teacher, also counted tree rings on one of two fortifications near Lexington, Kentucky, and reported on them in his *Discovery, Settlement, and present State of Kentucke* (Wilmington, Del., 1784).

On 2 October 1786, General Samuel H. Parsons, "an officer of standing and character," had written to both President Joseph Willard of Harvard, and even earlier that year, with a plan of the Marietta mounds, to President Ezra Stiles (1727-1795)[471] of Yale. Stiles, linguist, student of many "curious" topics including astronomy, immediately asked Franklin his opinion of the "fortifications" at Muskingum. Franklin recognized this report to be a matter of public interest and passed the communication on to the *Columbian Magazine*, where it appeared in May 1787. Franklin suggested that the earthworks might possibly have been constructed by De Soto as a defense against the Indians. Noah Webster supported this view in the *American Magazine* in 1787, and it was reprinted in Carey's *American Museum* two years later. It was this article that Colonel George Morgan referred to in the following letter to his older brother, Dr. John Morgan.[472] Col. Morgan (1743-1810), merchant, Indian agent, land speculator in Ohio, was at this time living at his estate, "Prospect," near Princeton. He had given his brother bones of the mastodon and other fossil remains from an expedition to Big Bone Lick, Kentucky in 1766.[473] The letter had been passed on as of special interest to Barton, who read it before the American Philosophical Society.

Prospect N.J. Aug. 1789

Dear Brother

I have read with Attention and Pleasure the Correspondence of Noah Webster Esqr. with the Revd. Dr. Ezra Stiles respecting the ancient Fortifications found in the Western Country as published in that valuable Repository of Useful Intelligence, Mr. Careys American Museum.

It may perhaps be agreeable to Mr. Webster as well as to other curious Enquirers into the Natural History of the Country and the Productions of Art to be informed that the most extraordinary Works of this kind are to be seen on the Mississippi & Missouri Rivers where it is certain Ferdenand de Soto never penetrated--Indeed I cannot, from his History, believe that he ever proceeded farther North than the Chicasaw Nation in Latitute 35 or 36, though I am pleased with Mr Websters ingenious Ideas & Reflections in

469 Barton, *Observations*, 16.

470 Robert S. Cotterill in *DAB*.

471 Franklin B. Dexter, *Literary Diary of Ezra Stiles* (New York, 1901) 3: 402; James H. Cassedy in *Colonial Medicine*, 257-259, portr.; Fulton, *Silliman*, 7-9, and passim; Hindle, *Rittenhouse*, 241 and 243: Stiles was an early member of the APS; Harris E. Starr in *DAB*.

472 Butterfield, *Rush*, 245; Bell, *Morgan*, 173.

473 [The American Mastodon was later described from Big Bone Lick as *Elaphas americanus* by Robert Kerr, 1792. Georges Cuvier would also describe his fossils as *Mastodon giganteum* in 1806. In 1799, J. F. Blumenbach introduced the name *Mammut ohioticum*. The modern scientific name of the Mastodon reflects its origin: *Mammut americanum*.]

making him traverse even to the Sources of the Ohio where these Fortifications are common.

The Style indeed of the Works West of the Mississippi & up the Missouri River is very different from those found in the Ohio Country; from whence I conclude they must have been executed by different Nations.

One of the most remarkable of those in the Ohio Country is opposite the Mouth of Scioto; I lately surveyed it & send you a Draft thereof inclosed.

It is worthy of Observation that within the Country bounded by the Missouri River on the North, the White River on the South a Range of Mountains on the West & by the Mississippi on the East, where these fortifications are most numerous and extraordinary in Extent & Construction, and in the finest Country of North America, containing more than an hundred millions Acres, there never has, I believe, been settled in the Memory of Man, any Nations or Nation of Indians until within these few Years some scattered Families from the East Side of the Mississippi have obtained the Approbation of the Spanish Government to seat themselves here on certain mutually advantageous Conditions: And if the Unites States shall force the Indians on their Borders into a general War & shall overpower them, they will in my Opinion retire to this Country, & may one day become a more formidable People than they are at present.

It is within this Territory & nearly central as to Latitude, on the Banks of the Mississippi that I have laid out a Plan for the City of New Madrid And where a great Settlement & Population will take Place if the Crown of Spain will concede certain Rights & Privileges in Government, & in civil & religious Liberty, which have been stipulated for—otherways no Encouragement whatsoever will answer the Expectations of the Spanish Government, and the Settlement will of course fail or become as contemptible as others in that Quarter—As I mean to revisit that Country it will give me Pleasure to answer from the Spot any Enquiries you please to make with regard to its natural History.

I am Dear Brother Yours Affectionately,

George Morgan

For Mr Barton," in hand of copiest of the letter. [In Barton's hand]*: "Presented to me by Colonel George Morgan May 5th 1792. B. S. Barton. Read in Society 18 May 1792"*[474]

Barton's chief concern was on the origin of the mounds and of the people who built them. Pursuing further information he wrote in January 1791 questioning Jonathan Heart who had also been a member of the survey party. He read Heart's reply at a meeting of the American Philosophical Society 8 February 1792, "On the antiquities of the Western Country." It was then published in the forthcoming volume of the *Transactions.*[475] With Barton as a co-author who had added comments and two illustrations, it also appeared as a pamphlet of thirty-nine pages in 1796. Heart concluded that the earthworks had not been constructed by De Soto since he had not visited the localities concerned and had moved too fast to pause to construct them. They were not the work of ancestors of then living Indians, or

474 Barton papers, APS. The reading recorded APS, "Minutes," 205.

475 *Trans. Amer. Philos. Soc.* 3 (1793): 2.

tradition would support such a view. They had been the work of a sedentary people, not nomadic huntsmen, and were of a people with an obedient social organization.[476]

To Winthrop Sargent (1753-1820) born in Gloucester, Massachusetts, who, after the formation of the Ohio Company, was appointed in 1786 by Congress as Surveyor of the Northwest Territories and the following year became Secretary of the Ohio Company, Barton addressed eleven queries dated 4 June 1794. The first question of what almost amounted to a natural history of Ohio was concerning earthen fortifications and ancient vestiges. Barton read that part of Sargent's answers as "A drawing of some utensils, and ornaments...from Cincinnati, August 30, 1794," to the American Philosophical Society 19 February 1796. After the delay of the appearance of the volume the paper appeared in the *Transactions* 4 (1799): 177-178. In that same volume there appeared also Barton's "conclusions," which he had read before the Society 20 May 1796, and published as a letter, pages 181-215, from himself to Priestley.

Continuing his interest on the origins of the Indians, Barton sought data from Samuel Preston of Stockport, Pennsylvania. Preston replied with a thirteen-page foolscap report dated 15 December 1804. Barton also addressed eleven questions dated 25 March 1806 to William J. Parrish of Canandaigua on the Seneca River near the lake in New York State.[477]

An intimation of the excitement and popularity of "mound fever" is given in a travelogue of Thaddeus Mason Harris, Unitarian minister who believed a "lost race" had built the mounds. His *Tour* of 1805 told of his visit to Grave Creek, where the "Big Mound" was fifty-eight feet high. "When we consider the multitude of workmen, the length of time, and the expense, requesite to form such a stupendous mound; when we reflect upon the spirit of ambition which suggested the idea of this monument, of great but simple magnificence, to the memory of some renouned prince or warrior, we cannot but regret that the name and the glory it was designed to perpetuate are gone—lost in the darkness of the grave."[478]

Disagreeing with Rev. Harris was Bishop James Madison of Virginia, in Jefferson's coterie, and one-time president of the College of William and Mary. He believed that the predecessors of living American Indians had constructed the mounds, not a "lost race."[479]

Robert Silverberg in his *Mound Builders of Ancient America, the Archeology of a Myth* (Greenwich, Conn., 1968) reported that "there are so many [earthen heaps] ten thousand in the valley of the Ohio alone,—surely the work of a vanished man." Then he asked, "Why a vanished race?" He believes the evidence shows that the Indians of Ohio were semi-nomadic, obviously incapable of sustained effort, without traditions of their own supportive of any mound building, and that when questioned they spoke vaguely about ancient tribes.

J. D. Jennings has recently given his view of these mounds and their wider significance. Skilled artisans designed grave goods. For example, the Hopewell Culture, (in the Cincinnati area) dated as 200 B.C. or somewhat earlier, collected obsidian from the Yellowstone, copper from Isle Royale, Michigan, mica from the southern Appalachians, and marine shells from the Gulf of Mexico to ornament a single grave of a mound that sometime was thirty feet high and 100 feet long. Jennings concluded that "The Mississippian cultures appear to have arisen or evolved in the 'Deep South' from an indigenous base with strong influences from some Mesoamerican source."[480] In short, in current opinion the movement of mound-builders over the centuries was from Mexico northward finally into the upper Mississippi Valley, rather than, as Barton had originally suggested, from Ohio southward to the Toltecs of Mexico. What led to the extinction of the mound-builders is still a mystery.

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476 Haven, "Archaeology," 25-26.

477 Barton papers, APS.

478 Harris, *Tour* (1805): 64; Thwaites, *Travels* (1904) 3: 362.

479 James Madison, "Supposed fortifications of the western country," *Trans. Amer. Philos. Soc.* 6 (1803): 132.

480 Jacquetta Hawkes, ed., *Atlas of Ancient Archaeology* (New York, 1974), 294.

Barton's interest in the mound-builders continued. In an undated fragment put in with an undated journal he wrote: "in the year 1791, the Reverend Mr. Kirtland[481] informed me that there were then known fourteen or fifteen ancient fortifications within the territory of the Six-Nations. I presume this is not one-fourth of the number of these works that are known to us." That Barton's was the first attempt to give a real time-depth to the pre-Columbian history of the New World was the conclusion of Wiley and Sabloff.[482]

Observations

From the earliest days of settlement in North America there had been interest in the origins, customs, traditions, and language of the natives. When Washington and Franklin attempted to satisfy the curiosity of the Empress of Russia, Catherine the Great, with Indian vocabularies, those of the James River area of Virginia, so carefully recorded by William Strachey in 1610, were still in manuscript in the public records in England, not seeing publication until 1953 by the Hakluyt Society. Jefferson spent many an hour recording vocabularies with the assistance of Washington, Franklin, and Ezra Stiles, who was, according to Samuel Miller in 1803, "one of the most learned men that our country ever produced."[483] Stiles, who had once lived in Dighton on Taunton River, Massachusetts, in answer to a query of Barton's dated 29 July 1790, had sent copies of the Dighton Rock, the inscription on which had been a puzzle as to its origin since its first observation in 1680. Stiles had read Barton's *Observations of some Parts of Natural History* (1787), and sent his comments. Most of the designs are now deemed meaningless scribblings of colonial times, but photographs indicate they may date from 1511 and the lost Portuguese explorer Miguel Corte-Real.[484]

Indian uses of plants, another genuine American subject, fascinated Barton, and their names, as could be expected. Benjamin Rush, with information gleaned from his years with the Revolutionary forces, considered the subject in his *Medical Inquiries and Observations.*[485]

Barton's admiration stemming from his visit to the Indian encampment at Beaver Creek still carried over.

> *...but it is unnecessary to add, that there are few nations of men who are blessed with more vigorous intellects than the Indians; and the little progress of Christianity among them is to be attributed to two different causes, first to that reluctancy which the ruder nations of mankind, in particular, forsake the religious customs of their forefathers; and secondly to the very improper means which the Jesuits took in propogating their doctrines.*[486]

Then he added, "but notwithstanding all the toils, the persuasions, and the menace of the Jesuits, they never would be convinced either of the truths, the beauties, or even the utility of Christianity."[487] He cautioned that it was the "serious duty of every inquirer to augment the volume of facts, and to indulge as little as possible in the reveries of *Fancy* and

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481 Samuel Kirkland (b. Kirtland, 1741–1808), devoted missionary to the Oneida Indians; graduate of the College of New Jersey, 1765. He was in and out of Philadelphia on behalf of the Indians 1790 to 1792. Joseph D. Ibbotson in *DAB.*

482 Gordon R. Wiley and Jeremy A. Sabloff, *A History of American Archaeology*, ed. 2 (San Francisco, 1980), 22. "Map of Ohio by Rufus J. Putnam," January 1804, showing Indian tracts and villages, and towns of settlers, is tipped in Thwaites, *Travels* (1904) 3: 350.

483 Medical Repository 3 (1803).

484 Edmund B. Delabarre in *DAH.* Stiles's answer to Barton was read before the APS 1 October 1790. APS, "Minutes," 184.

485 (Philadelphia, 1794–1798, 5 vols.). Fenton, "Herbalism," 522–523, mentions Rush's account.

486 *Observations*, 73 n. M.

487 *Observations*, 18.

Conjecture...because there is a strange propension in man to dwell on the more obscure and hidden subjects of knowledge—to *Exercise* his *Imagination* whilst his *Judgment* is suffered to remain *Passive*."

Of the mounds and mound builders that had so impressed him, he wrote: "Superstition, which triumphs over judgment, and mocks the labors of mankind, gave birth to these remarkable American monuments."[488] He concluded that there was a relationship between the monuments of Mexico and those found along the Mississippi River. But he is impressed that such monuments are found in Ireland, raised, he says, by the Danes. "We every day, at least, see new reasons to suppose, that the new has been peopled from the old world."[489] The Greenlanders, and perhaps the "wretched Esquimax" are descended from the Danes, but he must "confess the amazing similitude of the Iroquois to some of the nations inhabiting the northeast parts of Asia."

Among his many references to the works of early historians he mentions Jefferson's *Notes*, and Jefferson's having excavated a barrow on low grounds near the Rivanna River in Virginia on which there had been an Indian town. Jefferson had found bones of about 1000 persons and infants dumped in layers at intervals, then all covered with soil. There had been no sign of a battle. He had concluded that there was no such thing as an Indian monument: "for I would not honour with that name arrow points, stone hatchets, stone pipes, and half-shapen images." The mounds, he concluded, were repositories for the dead. "Some have thought they covered the bones of those who have fallen in battle fought on the spot of the interniment. Some ascribed them to the custom, said to prevail among the Indians, of collecting, at certain periods, the bones of all their dead."[490] Kalm had been the first to describe "anything like the vestiges of civilization" in North America. Barton also refuted the legend of Modoc of Wales. He had read of Modoc in Robertson, *History*.[491] Just as he was completing *Observations*, Barton saw a copy of Clavigero, *History of Mexico*, which describes fortifications and pyramids, and various opinions "concerning the people by whom these eminences were constructed." He had also consulted the Scottish philosopher and sciolist James Dunbar (d. 1798), *Essays on the History of Mankind in Rude and Cultivated Ages* (London, 1780). Barton concluded that he may have "supposed an unnecessary degree of greatness and refinement among ancient nations of the world."[492]

Barton's "Advertisement" on the verso of the title page of *Observations* reads:

> *The following pages are submitted to the Public, with the greatest diffidence. They are the production of a very young man, and were written chiefly as a recreation from the laborious studies of medicine, during a bad state of health; the generous critic will, therefore, he flatters himself, correct the errors of this first effort with candor.*[493]

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488 *Observations*, 59.

489 *Observations*, 66.

490 Quoted in Karl Lehmann-Hartleben, "Thomas Jefferson, archaeologist," *Amer. Jour. Archaeol.*, ser. 2. 47 (1943): 161-163.

491 *Observations*, 43. As late as 1806 Barton wrote, "I hope to be able to publish at some future (perhaps not early) period my *Strictures on Dr. Robertson's History of America*. For this work I am in possession of ample materials: These shall be preserved, though it is possible I may never be able to digest them into the order in which I wish them to appear." He will also give his corrections of Buffon to the public. *PMPJ* 2 (1806) Pt. 2: 144, n.

492 *Observations*, 11.

493 The original draft of a very young author read:
"The work which I now present to the public claims not the character of a regular or systematic history of the aboriginal Americans. Such a work, indeed, the ambition of my earlier years suggested; and in the fervid seasons of youth, I vainly fancied myself not altogether unequal to it. But the increase of modesty, and the diminution of aspiring confidence are sometimes, at least, the offspring or attendant of riper age, and of a more enlarged science. I ventured to take a calm and deliberate view of the ample field which laid before me. A thousand subjects of importance, each accompanied with its weight of difficulties, I saw with pleasure and with pain. I

Whether that was his final revision, or one by the publisher is uncertain. The "Advertisement" continued:

> *The four parts relative to Natural History, which will complete the work in one volume octavo, will be put to press in a few months: the pages now given to the public, although entitled Part first, form a separate work of themselves, having no connection with Natural History.*
>
> *The author returns his thanks to Mr. William Tilton, of Philadelphia, who politely favoured him with the accurate plan and description of the remains near the Rivers Ohio and Muskingum, which form the most curious part of this work.*

Back in Edinburgh, his *Observations* in press, on 15 January 1788 Barton read a paper on American Indians before the Speculative Society, to which he had been elected. He also anonymously contributed an introduction along with his criticisms to the Edinburgh edition of Samuel Stanhope Smith's *Causes of the Variety.*[494]

Rev. Samuel Stanhope Smith (1750–1819),[495] born in Pequea, Pennsylvania, from 1799 teacher of moral philosophy at the College of New Jersey (now Princeton), D.D., Yale 1783, had been elected to the American Philosophical Society in 1785 and had delivered before the Society, 21 February 1787, a lecture that was published as *Causes of the Variety* later that year. Smith contended that different climates or manner of living produced the variety of peoples. This view differed from that of Henry Homes, Lord Kames in his *Sketches of the History of Man* (Edinburgh, 1774). Kames trifled with the Adamic story and suggested that several races had as many separate origins, each fitted for his environment, the torrid zone, or whatever. This suggestion Smith disavowed. Barton entered the controversy mixing the enigma of racial skin color on his own palette of interests. What an opportunity he saw when his friend Julius von Rohr set out for West Africa in 1793 to observe and record some of the variations there that Barton was seeing on the streets of Philadelphia! Von Rohr, alas, did not reach Africa.

Barton was the "gentleman of the University of Edinburgh" who had provided the introduction and notes for the Edinburgh edition of Smith's *Causes of the Variety*, although in his letter to Rush from Edinburgh he does not mention this fact. He wrote Rush that "Mr. Smith's Essay on the 'Varieties of Mankind' has made its way into Scotland; and a new edition with the notes is now in the press of Mr. Elliott;—the work will be a popular one." Barton's two unpublished essays, the first probably submitted toward his degree and preserved in the Library of the Royal Medical Society of Edinburgh, are relevant to Smith's thesis. "An Essay towards a natural history of the American Indians: being an attempt to describe and to investigate the causes of some of the varieties in figure, in complexion, &c. among mankind" numbers fourteen pages. The untitled, unfinished essay of nine pages is on the "negro albino" and remote causes of complexions in general.

Smith as well as the medical community (Rush, Caldwell, and Barton, among others) on 23 July 1796 answered a broadside advertisement about the Negro Henry Moss, who in the space of four years had grown quite white, so becoming a medical curiosity. He was to be seen

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soon discovered that to write the *History of America* an immensity of labour, a great deal of time, and no common Share of learning and of genius were required. I relinquished my scheme: a scheme one of the fondest of my early life, and the contemplation of which had often soothed and comforted me, in the midst of sickness, and of difficulties." (APS. B. B284. d. Barton, Barton, *New Views*, [but *Observations*] #2.)

494 Winthrop D. Jordan, who edited Smith's *Causes of the Variety* of 1810 (Cambridge, Mass., 1965), in his "Introduction," xvi, acknowledged Barton's contribution, but errs in attributing to Barton a Göttingen degree. Barton did, however, write to Blumenbach.

495 John E. Pomfret in *DAB*.

at Leech's Black Horse Tavern in Market Street.[496] Rush recorded the details of his examination, and published on the "Supposition that the black color (as it is called) of the negroes is derived from leprosy."[497] Barton and Caldwell each gave his own suggestions. Smith lectured to his students on Indians and discussed the features of Africans, and especially the whitening of the skin.[498]

In the second edition of his *Causes of the Variety* (New Brunswick, N.J., 1810) Smith continued to advocate the environmental role of climate and manner of living on racial skin color. To his "evidence" he added the instance of a white man adopted by an Indian tribe who, as an adult and only after four years, was "tarnished with as deep an Indian hue as any of the camp." Smith cited "the remark of the ingenious and judicious Dr. Barton" that perhaps the opposite change might be experienced as well. Smith wrote to Barton:

> *Princeton Jan. 4, 1811*
>
> *Dear Sir,*
>
> *Permit me to request your acceptance of a copy of my essay on the varieties of mankind in its recent, & improved form. Perhaps you will find less objection to its principles in its present, than in its original state. However, whatever differences of opinion you may have with me, I am sure they will always be treated with the candor of a gentleman, & a real scholar & philosopher.*
>
> *I am solicitous for the appearance of your remarks on the languages of the Aboriginal Americans, & their comparison with those of the Asiatic tribes, which may contribute to identify the origin of the respective people. Some observations you will find in the present essay which go to deduce the Southern Americans chiefly from the southern Asiatics, & these latter ultimately from the northeastern Tartars. This, however, may not be contrary to your idea, inasmuch as wrecks of the same language may be preserved thro many migrations.—*
>
> *The best antiquarians have likewise derived the origin of the ancient Teutonic & Celtic nations of Europe from the vicinity of the Euxine & Caspian seas, by means of language, as well as by their respective religious opinions & rites.—*
>
> *Dear Sir, Yr Mo. Obdt. & Hble. servt.*
> *Sam S Smith*[499]
> [by] *Mr. William Johnson*
> *Received January 9th 1811.*

That Smith was a "thoroughgoing environmentalist" viewing the Indian in his total setting, physical environment and culture, the major variables, is the view of anthropologist A. Irving Hallowell.[500] *Medical Repository* in a review stated that Smith's object was to "reconcile philosophy to religion by referring all the individuals of the human race to the same original stock and parentage."[501] To this Barton acceded.

Among Barton's lecture notes an undated description of Samuel Stanhope Smith survives:

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496 Corner, *Rush*, 307.

497 *Trans. Amer. Philos. Soc.* 4 (1799): 297–299.

498 Samuel S. Smith, *The Lectures, corrected and improved...* (Trenton, N.J., 1812), 46.

499 Barton papers, APS. Smith's *Causes of the Variety* was not located for Ewan, "Barton's Library."

500 Hallowell, *Anthropology*, 71.

501 *Med. Repos.* hex 3. 3 (1812): 150–159.

> *The principal of the Academy* [Princeton] *is the Reverend Dr. Smith, a Presbyterian clergyman. He is a man of some ability in the literary history of his country, though I think his reputation has been much too highly estimated. As a student he is laborious and as the director of the academy punctual and assiduous. His writings, by which principally I am entitled to form a judgement of his attainments and of the powers of his mind, discover great proofs of industry and precision. His Essay on the Causes of the Variety in Complexion and Figure among Mankind is not the work of a profound and discriminating naturalist, but it contains many observations that are just, and the work, which is written in a plain and unadorned style, may be read with pleasure and improvement.*[502]

Barton brought back to Philadelphia the confidence that in such an atmosphere he had in hand a subject of as great an interest to literate America as to himself. He had in mind publishing an extended work on Indians and correcting errors in his own *Observations*. With his *Proposal* dated 22 December 1789 on "Indian Antiquities" he hoped to raise subscribers for the enterprise. This would comprise material from *Observations* (1787), the answers to the thirteen queries he had sent to William Bartram, written while in Amsterdam, and for which the answers had reached him in December 1789, material he had gathered on his visits to an Indian village in 1785, and topics resulting from his wide reading in European sources.

To Thomas Jefferson, whom he so admired for his *Notes on Virginia*, and who had been interested from his youth in the natives and their history and language, he sent a copy of his *Proposal*. Jefferson had been disappointed that Father Joseph Française Lafitau (1670–1740), Jesuit missionary in Canada, "a man of much classical and scriptural reading," should insist on fitting European social attitudes into his preconceived idea of what those Indians should be. Barton's letter to Jefferson with his *Proposal* was his first communique with the man he so greatly admired. Written 26 July 1790, it read in part:

> *I take the liberty of enclosing to you a paper of Proposals for a work which I have been engaged in writing for some considerable time, and which is now nearly ready for publication. I am confident your name, Sir, as a subscriber, will add not a little to the consequence and success of my undertaking...Unknown as I am, to you, I cannot but apologize for the liberty of this letter: but, my apology I have already hinted at: the importance of your name to an undertaking of this nature, in the New World.*[503]

It was not until *New Views* (1797), revised (1798), that Barton succeeded in putting into print the first condition of his proposal, with more in *Archaeologiae Americanae* (1814), but his planned extension of *New Views* did not materialize.

Jefferson welcomed Barton's *Proposal*, and a correspondence and conversations about Indian language was begun. Added to his own knowledge were the words Uncle David Rittenhouse had recorded for ordinal numbers when he visited the Onondago community at Chenango in upper New York State. To learn directly from a southern resident, Barton wrote 29 July 1792 to Alexander McGillivray, the half-Indian chief at "Little Tallasee," now Tallahassee, Florida, for information on the confederacy over which he presided: it was a sincere statement of his attitude:

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502 Barton papers, APS.

503 Boyd, *Jefferson Papers* 17: 276.

> *It is my wish to rescue from the prejudices of European writers the character of those nations, whose preservation and whose happiness, I most ardently pray for... The interest you take in advancing the inestimable rights and blessings of a great and injured people, whilst it demands their gratitude, calls for the praise of the historian and philosopher. General Knox takes charge of this letter.*[504]

Barton's "Historical and philosophical inquiry into the original nature and design of various remains of antiquity which have been discovered in America" was to have been a one-volume octavo with a large map and several plates, and to sell for "two Spanish milled dollars." Publication depended on a subscription of three hundred. Only one copy of *Proposals* is known: that in the Boston Public Library (Figure 46). Probably even with adequate subscribers there were other reasons for Barton not to produce "Indian antiquities." So soon after arriving home from Edinburgh he had become a curator at the American Philosophical Society, was establishing a medical practice, and was teaching a course in natural history at the University. The material that had been intended for this work became parts of later contributions, e.g., with Winthrop Sargent in 1796, 1797, and in *New Views* (1798).

Among those to whom his *Proposal* had been sent were Pennant, Banks, Lettsom, and a fellow pupil, Solomon de Leon. Whether from a lack of inclination to canvas for a publication or remembering the failure of *Observations*, Leon in a friendly letter to his former Edinburgh classmate, 31 December 1792, replied:

> *With respect to your proposals for publishing a historical and philosophical enquiry concerning the remains of antiquity in America—Since I received your letter I have not had an opportunity of procuring you any subscribers—I dare say the work would sell very well here—My name is at this moment & I hope will ever be at your service—In the list of your titles What is the reason of putting professor of Natural History &c. last? I think it is usual for that title to stand first—*[505]

Interest continued: Major Jonathan Heart, a Virginia member of the Survey group westward to the Ohio in 1785, had submitted a report on the tumuli of the area near the junction of the Muskingum and Ohio Rivers to the *Columbian Magazine* in May 1787. He wrote to Barton from Fort Harmon, now in West Virginia, 5 January 1791, his observations on ancient works of art and the native inhabitants, etc., which Barton read before the American Philosophical Society 3 February, and which was published in the *Transactions*.[506] Barton now, besides gathering notes on native American animals for Pennant, was working toward his *New Views*, a work particularly on languages.

Homeward bound on the *Apollo*

The sea voyage on the *Apollo* with all the wonders of the water were healing to body and spirit, once the young passenger had gained his sea-legs. Captain William Billings enjoyed the youth's lively interest in all about him. Mr. John Pemberton (1727-1795), successful sugar merchant and eminent Quaker preacher of Philadelphia, was returning from his second proselytizing and preaching trip to Europe, having made the first in 1750. He left on his third trip in 1794 and died the next year in Westphalia, Germany. Both proved compatible companions, the elder men inspiring sources of fascinating facts. In his "Common Place

504 Barton papers, APS. His copy.

505 Barton papers, APS.

506 *Trans. Amer. Philos. Soc.* 3 (1793): 214-222.

Book,"[507] vellum covered, begun on the *Apollo*, Barton records many of the notes from these gentlemen, e.g., Mr. Pemberton's account of the eloquence of the American Indians, the wisdom of Tidiuscung, and "that George Washington strongly persuaded Braddock to listen to the council of the Indians, but Braddock disdained such council...The Indians, Mr. Pemberton says, used to compare General Braddock and his army to a large tortoise, which crawls very deliberately, but on meeting with a trunk of a tree, being unable to get over it, falls flat back." There were notes on Benjamin West and his "imaginary" depiction of *William Penn's Treaty with the Indians...* (London, 1775). He made notes that West had accompanied Mayor Samuel Powel of Philadelphia to Rome, his way paid; on Francis Drake and his introduction of the Andean potato to his estate at Younghall near Cork; of albinos; the aurora borealis; and a cherry tree three to four feet high growing in the crotch of a buttonwood.

Many of Barton's entries relate to temperature, latitude, and longitude, taken from Billings, and sometimes inaccurate as Billings would discover. We have chosen passages, either to quote or paraphrase, on natural history and historical topics.

> ***Wednesday 22 July 1789*** *Set out betw. 9 and 10 in morning from Carolina Coffee House, Berchin Lane, Passed thru Dartford, &c;" dined at Gravesend "where I slept all night.* [There were, naturally, observations along the route, subjects for conversation. "Ligustrum vulgare, common privet" died from undetermined cause, in 1769 according to Mr. Robert Smith, from "very great frost" in the spring. Pemberton and Mr. James Thornton agree on *Apollo*, 1789, that cause is "Great and powerful."]
>
> ***Thursday 23 July*** *went on board ship Apollo (Capt. Wm Billings) Cabin passengers = Mr. John Pemberton, Mr. James Thornton, Mr. & Mrs. Jones of Boston, Hays, a Boston Jew, Mr. Grubb (an Englishman), Mr. T. Curtis (an Englishman), Mr. Goulson (a very ingenious Englishman) and myself. Anchored in Downs, opp. Deal, after having run on a shoal and being detained there Some time. We were detained in the Channel several days.* [The carpenter on the *Apollo* told Barton that English oak was better than American oak for ships, due to the fact that English oak was growing in poor soils, American oak in rich soils and therefore was more porous.]

While the passengers waited on board *Apollo* for proper sailing conditions, there was time for exchange of medical lore.

> ***A Recipe for the King's Evil***
> *-Take two handfulls of broad Plantaine*
> *-Two handfulls of Bramble Leaves*
> *-One handfull of Rue*
> *-One ounce of Senna*
> *-One ounce of Sassafras*[508] *chips*
> *-Four ounces of Hempseed beat small*
>
> *Boil these all together in five quarts of Middle Wort, till it comes to a gallon, and when that is done Strain it through a sieve, into a deep earthen pot let it stand and settle; then pour it from the settling and when near cold put some yeast to it and work it like Beer. Take as much as will cause two or three stools a day.*

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507 Barton, "Commonplace Book," HSP; copy at APS. A portion was published in "Historical Notes," *Pennsylvania Mag. Hist. Biogr.* 9 (1885): 334–338.

508 [Originally described as *Laurus sassafras* by Nuttall, 1818, but recognized in its own right today as *Sassafras albidum* (Nutt.) Nees. IPNI.]

N.B. The above Recipe was given to Mr. John Pemberton by Mary Gray, of Ware, in the County of Hertford, Great Britain, who knew of several persons who had been cured by this prescription.

Continuing:

Friday Aug. 7 *We caught a small blue shark. Mrs. Jones, Capt. Billings, Mr. Goulson, and myself, partook of stakes shark, cut from tail, broiled, peppered, and salted, and eaten with vinegar... We all agreed that the flesh was very tender and agreeable to the palate, tasted like flesh of eel.* [Caught about 150 miles from Land's End. Capt. Billings says a Blue shark about 18 feet long was taken off Bahama banks, in the West Indies, a part eaten by a cat "proved mortal": it died in convulsions. Billings ascribes the poisonous property to the shart's having fed on the copper banks of the Bahamas. "This seems very probable."]

Saturday Aug. 8th *Some of us ate of it again* [at dinner. Billings found dried skin served well as chagreen[509] in polishing ivory. One of the sailors told him that the head of shark has ranker flesh but this may be removed by pickling for a short time.]

Tuesday 11 Aug. 1789. *This day we saw several porpoises near our ship. In the night time, the sea was a good deal illuminated. I am inclined to think that this phenomenon is more connected with some particular states of the atmosphere than with others...If I recollect it is very luminous near the Cape of Good Hope; and our first mate tells me this appearance is more luminous along the Spanish Main, as at Carthagena, &c than in other places he has seen. The luminous appearance is certainly owing, in part, to a number of animals in the sea. Many of these I have seen in the Sea, exhibiting the phosphoric light...The muscular power of these animals...is certainly great, for when I have put them in a basin of salt water, I have observed that they contracted most violently.*

Wednesday 12th *Spoke with brig St. Michael bound for Boston Capt. Edes.* [Barton sent a letter to brother William in Philadelphia.]

14 Aug. 1789. [Some of the luminescent animals were thrown onto the deck of the ship—] *on taking them into my hands, and, on throwing them along the deck the track was easily marked by the luminous mark they left...Some of these animals, at least, have the power of stinging, one of them having stung one of the passengers.*

[Billings's interest in this part of the Atlantic led him to return to the area.[510]]

Thursday Aug. 17. [A large sea turtle] *seems to be sleeping on surface of the water.* [Billings called it a Green turtle, but it appeared to be reddish brown, weighing about 40 or 50 pounds.] *Are we nearer to any land than we suppose ourselves? or are turtles commonly seen at such a distance out at sea?*

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509 Chagreen, chagrin, or shagreen. Rough skin of fish or wild ass, horse, camel, goat, etc.

510 Excerpts from Captain Billings's journals from Philadelphia to Corunna, his return trip in 1789, "to ascertain the difference of temperature between the air & water, particularly when passing the Gulph Stream, or any body of land or Banks," was read, Barton present, to the American Philosophical Society by Dr. J. Foulke at the meeting of 20 May 1791, and his journal to Oporto and return on 15 June 1792. On 21 September extracts were referred to the publication committee, but instead the observations of Jonathan Williams of Philadelphia. This appeared in *Trans. Amer. Philos. Soc.* 3 (1793): 194.

Sometime between 18 August and 3 September the ship was in harbor at Lisbon. Barton was too occupied to record activities. He made his way to the newly established Academy of Sciences where he met the Abbé Corrêa da Serra, one of the founders, keenly interested in natural history. He surely delivered his talk on goiter, which was published in Portuguese in 1801, and he was honored with a "diploma" of membership in the Society. Certificates of membership at this time were often referred to as diplomas. Corrêa, himself, on arriving in London 23 March 1797, wrote to James Edward Smith that he had a diploma from the Lisbon Academy for Smith as well as copies of the Academy's publications.[511] More specific was William Withering, British physician and author of *A Systematic Arrangement of British Plants*, ed. 4 (London, 1801, 4 vols.), who was also a "Member of the Royal Academy of Sciences at Lisbon; Fellow of the Linnean Society; Honorary Member of the Royal Medical Society at Edinburgh, &c," Barton also belonging to the last. That Captain Billings returned on at least two other occasions to Portugal is related in his journals at the American Philosophical Society. On ship again, Barton resumed his journal.

> ***Thursday 3 Sept. 1789.*** *This day as well as some days before, we saw numbers of Exocoetus volitans or flying fish.* [He imagined they were greatly preyed upon by dolphins, as well as by sea birds, especially sheerwaters. These birds were] *in quest of that particular sea weed, called Gulph weed, which we have seen in considerable quantities.* [To some were affixed small shells, which are the habitation of an animal.] *This fucus (for such I presume it is) may be styled baccatus, from having a number of little round berries on it. Capt. Billings says the affixed animal is the Barnacle.*
>
> ***Saturday 4 Sept.*** *In the night time a Flying Fish came on board on ship.*
>
> ***Sunday 6 Sept. 1789.*** *a large bird...some of the men said it was a gannet: it certainly appeared like a goose: and I am inclined to think it was lost either from its flock, or had been driven to sea by a gale, or some other circumstance.*
>
> ***Monday 7 Sept. 1789.*** *Lat. 39°49', long. 61°. Spoke with a ship from GeorgeTown in Maryland, bound to London out ten days (I presume the Captain meant from the Capes of Chesapeak). He reckoned himself in the longitude of Fifty Four degrees.*
>
> ***Tuesday 8 Sept. 1789.*** *a number of Flying Fish...Fuci seen floating in the sea. Some taken up and adhering to them quantities of Serpula orbis &c &c...Captain Billings says we are not yet in Gulf Stream.*
>
> ***Sunday 13th Sept.*** *Spoke with a brig from London bound to Baltimore. More flying fish than seen up to now.*
>
> ***Friday 18 Sept. 1789.*** *Small yellow bird came on board our ship, was caught, was greatly fatigued, put in a cage, ate flies out of hand.* [Land birds when caught at sea, far from land, universally die. Probably given too much to eat.]
>
> ***Sunday 20th Sept. 1789.*** *Lat. 39°. Capes of Delaware. Capt. Billings struck a boneta with his grange. We ate of this fish for breakfast, and agreed that it sat very well. A Kingfisher flew about our ship and alighted several times on the yards, &c—I saw the bird myself, and I am confident it was the common Pennsylvania Kingfisher. I am told also that a Bat and a Chimney Bird were seen near the ship. The muscular power of the Bonita,*

511 J. E. Smith, Correspondence 3: 187, Linnean Society, London. The Lisbon Academy was not known to have issued "diplomas" in the modern sense.

from what I observed, is very great. After the heart was taken out of its body, it continued to beat in my hands, and on a part of the ship, I think, for near twenty minutes.—...I also saw a beautiful Purple Portuguese Man of War (as it is called) sailing on the water near the ship. "We saw a Hawk, flying about the ship: one of the men said it was a Fishing Hawk. In the afternoon Captain Billings &c &c &c went out in a boat and got on board a French Brig bound to New York from Cape Francois: his reckoning was also out. We got some provisions from this captain, such as sugar, wine, oranges, bread, &c &c &c.

Monday 21 Sept. 1789. *Lat 38degrees 31. Capt. Billings says he saw a toad fish in the water today. Is this not a species of Echinus... This day we saw several Portuguese Men of War near the ship...Frezier*[512] *and Forster*[513] *talk of green clouds: I this evening had an opportunity of observing the sky considerably greened. The color, though pale, was evidently green; and even a beautiful green: I observed it about sun setting: it, however, extended for some distance along and above the horizon, and it continued (although) it became gradually fainter and fainter for some time—I am pretty confident that I have, once at least, observed this green appearance of a part of the sky before today.*

Tuesday 22 Sept. 1789. *A pretty large Grampus passed under our ship 3 or 4 dolphins appeared to be near mouth of Grampus which was, evidently, in pursuit of them...American Flecker—named by Capt. B—flew about ship several times.* [Also Wild Pidgeon] *appears to be a young one, I think, a female* [taken by Capt. B on board ship] *it had in its crop a few seeds of which I have taken care: in the Oesophagus and Stomach or gizzard it had a few seeds as those which were found in the crop.* [Also some green seeds and some small stones in the oesophagus and gizzard.]

Tuesday 22 Sept. 1789. *About sundown the Pilot came on board us...At 8 oclock we sounded and at depth of 15 fathoms, got on the tallow small particles of sand. In the morning* [Sept. 23] *we saw the False Cape (as it is called) it is very easy to see trees on this land.*

Sometime on board the *Apollo* Capt. Billings wrote for Barton a description of "Water Spouts" that he had observed on a voyage on 29 March 1783.

There were also miscellaneous notes: The goat on the *Apollo* liked tobacco. A Roman poet noted that it ate hemlock. "Is the Goat[514] known by Naturalists, to feed on a variety of foods? Omnivarius almost as much as any animals, I have seen, or read of."

Barton quoted Priestley extensively, e.g., on research: "to plow in hope, and to sow in hope; that, if not we, at least our posterity, may become partakers of our hope. 1 Cor. IX. 10. Dr. Priestley's Letters to Dr. Horsley. Part II. Preface p. xv.—" Had Pemberton loaned him a copy of Priestley's *Letters* to take to his cabin? Had Barton met Priestley on one of Priestley's visits to London?

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512 Amadee Francois Frezier (1754–1794), author of *A Voyage to the South-Sea, and along the Coasts of Chile and Peru...* (London, 1717).

513 George Forster (1754–1794), who travelled with his father, Johann Reinhold Forster on Cook's second voyage and wrote *A Voyage around the World in his Britannic Majesty's Sloop Resolution...during the years 1772, 3, 4, and 5* (London, 1777). Barton probably browsed copies of this and Frezier's in Banks's library.

514 [*Capra hircus*, the domestic goat, was described by Linnaeus, 1758, MSW.]

Six days after disembarking from the *Apollo* in Wilmington, Delaware, Barton wrote to his brother William on 29 September that he had received a diploma from the Lisbon Academy of Sciences.[515]

[515] W. P. C. Barton, "Barton." 16.

Chapter V

Philadelphia

"The man who discovers one valuable new medicine is a more important Benefactor to his species, than Alexander, Caesar, or an hundred other conquerors. Even his glory, in the estimation of a truly civilized age, will be greater and more lasting."
—Barton[516]

Pineal Gland

Of Barton's city, William Maclure of Ayr, Scotland, after visiting the United States for the first time in 1782, wrote from Madrid to Marie Fretagot, "I am much pleased that you have decided on Philadelphia as I have always considered it as the town most liberal in the Union and the freest from the speculative prejudices of Religion and Politics."[517]

The Philadelphia to which Barton returned from Edinburgh was indeed "the pineal gland of the republic" as John Adams had declared. Its hinterland supported nine out of ten breadwinners, and it was distinguished among American cities in both economic and cultural opportunities and activities. Scientific ideas and innovations stimulated by its colleges and medical school. From 1790 until 1800 it was the nation's capital, which had moved from Lancaster, and so brought persons from all areas of the new republic into contact with Philadelphia's leading citizens, so many of whom had participated in the War for Independence: Franklin, Logan, Shippen, Rush, Rittenhouse, Andrews, and Bishop William White, to name a few.[518] White had established a free school, one of the instructors having been the Reverend Thomas Barton. After independence the schools stressed, especially for the children of Loyalists, an appreciation of the opportunities that freedom from colonial government offered in this new country. White's school had developed into an Academy, a College, and eventually in 1791 it joined the state University to become the University of Pennsylvania. Robert Morris had established the first American Bank in 1781. The city boasted a thriving museum, established by Charles Willson Peale in about 1784, a free Library Company founded by Benjamin Franklin, the American Philosophical Society, which had also been furthered by Franklin, two almshouses, one city-operated and one by Quakers, and two hospitals, one city-operated and one Quaker.

Jefferson's concern regarding life for young men in the city was voiced on many occasions. When Thomas Withers of Dinwiddie, Virginia, introduced his son William to Barton as a prospective pupil, he wrote, "I suppose that the city of Philad. is a wide field for extravagence and dissipation, and presents a variety of amusements which are admirably well calculated to engross too much of the attention of young men."[519] When Benjamin Silliman coming from New England entered the medical school in 1802 as Barton's pupil, he lived at the boarding house of Mrs. Smith, "a high-spirited and efficient woman," at the corner of Dock and Walnut Street.

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516 Vignette on title-page of Patrick Kerr Rogers's thesis, *On Liriodendron* (Philadelphia, 1802).

517 *Indiana Hist. Soc. Publ.* 15 (1948): 287–417. Schoepf, *Travels*, 55–98.

518 These all appear in *DAB*; Franklin, Rittenhouse, and Rush in *DSB*.

519 Barton papers, APS. Withers to Barton 11 Nov. 1814.

> *She was liberal almost to a fault, and furnished her table even luxuriously. Our habits were, indeed, in other respects far from those of teetotalers. No person of that description was in our circle. On the contrary, agreeably to the custom which prevailed in the boarding-houses of our cities half a century ago, every gentleman furnished himself with a decanter of wine,—usually a metallic, or other label being attached to the neck, and bearing the name of the owner. Healths were drunk, especially if strangers guests were present, and a glass or two was not considered excessive,—sometimes two or three, according to circumstances. Porter or other strong beer was used at table as a beverage. As Robert Hare was a brewer of porter and was one of our number, his porter was in high request, and indeed it was of an excellent quality. I do not remember any water-drinker at our table or in the house, for total abstinence was not there thought of except, perhaps, by some wise and far-seeing Franklin.*

But Silliman found that:

> *Accustomed to a simple diet in New Haven, without wine or porter, and perhaps with only cider at dinner, the new life to which I was now introduced did not agree well with my health. In the upper classes of society in Philadelphia, the habits of living were then very luxurious and the spirit worldly. In my case, the effects of luxurious living were to a degree counteracted by vigorous exercise.*[520]

That most "pernicious article" to stand in the path of youth was decried by "counsellor of law" Charles William Janson, who "vented his spleen" when he wrote that "spirited liquors are, unhappily...still [easy] of attainment."[521] Benjamin Rush pressed for the outlawing of rum, when he declaimed "Banish from our borders the liquid fire of the West Indies, which while it entails poverty and disease, prevents industry, and foments private quarrels."[522] Samuel Latham Mitchill praised Benjamin Waterhouse for speaking out against alcohol and tobacco from his experience at Harvard. "It would please us to hear that this lecture was read in every college in the nation."[523] Whatever Barton's faults, he was modest in his consumption of wine. Like Jefferson, he was fond of Madeira with dinner.

It was not, however, all dissipation and excess. Joseph Glover, who took his degree under Barton in 1800, remembered that Philadelphia had been a "hot bed of medical science." Charles Caldwell in usual picturesque prose wrote in 1802 that Philadelphia "may be considered as the medical sensorium in our country. All improvements and discoveries...flow to it as naturally as sensation makes its way to the throne of perception, or as our rivers descend with their tributary waters to the ocean."[524]

Jefferson left evidence of his awareness of the city's prestige and opportunities in 1807, when he wrote to Wistar on 2 June about his interest in enrolling his young grandson, Thomas Jefferson Randolph, in natural history courses:

> *I am not a friend to placing young men in populous cities, because they acquire there habits and partialities which do not contribute to the happiness of their after life. But there are particular branches of science, which are not so advantageously taught anywhere else in the United States*

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520 Fisher, *Silliman* 1: 98–99.

521 Charles W. Janson, *The Stranger in America...* (London, 1807), 180–181.

522 Jeremy, *Wansey*, 145, in a speech delivered by David Ramsay.

523 *Medical Repos.* hex 2. 2 (1805): 421.

524 *An Eulogium to the Memory of Mr. George Lee...* (Philadelphia, 1802), 15.

as in Philadelphia. The garden at the Woodlands for Botany, Mr. Peale's Museum for Natural History, your Medical school for Anatomy, and the able professors in all of them, give advantages not to be found elsewhere.[525]

He wrote also to Barton, and T. J. Randolph enrolled in Barton's natural history courses in 1807 and 1809.

Philadelphia also boasted of more or less successful publishing houses. Two-hundred forty-six individual firms had been printing and selling books in the colonies and new republic before 1801. From Thomas Dobson had come the largest number of imprints, sixty between 1786 and 1800. Five of the six next largest firms in the number of imprints were also in Philadelphia. Matthew Carey had eighteen between 1792 and 1800.[526] Until 1800 the most ambitious project had been Dobson's eighteen volume reprinting of *Encyclopedia Britannica*, illustrated with 543 copperplate engravings. During his career as author, Barton used no less than sixteen different publishers. Many firms were short-lived, as the number of readers and subscribers at the time, especially for natural history and science, was still not sufficient to support the expense of those ambitious authors and their publishers.

Noticing that all the material lifted from the typebeds of Philadelphia was not of the uplifting cultural kind, John Davis, writing to his "affectionate friend," the Reverend Jeremy Belknap in Boston, 27 February 1796, was "mortified to see some of our best publications mouldering in Bookseller's shops while the Poney-races, a string of flip-flaps and other idle amusements of the theatre and Amphitheatre engage a general and uninterupted attention."[527]

Luigi Castiglioni, who visited Philadelphia while Barton was in Edinburgh, left his impression of the city in 1787: "One can consider this city, both in beauty and size, the metropolis of the United States." Cobbled streets had wide and convenient brick-covered sidewalks along either side. Lamps lit the city, and pumps delivered very good water at conveniently located sites. A public garden was "adorned with some beautiful American shrubs," many from the southern part of the country. The wide variety of religions in fine churches demonstrated the liberality of the community. The three-story brick building for the American Philosophical Society was being completed, and there was talk of a chemical laboratory in the basement. In the well-lighted, well-ventilated prison, debtors were separated from delinquents. The University had moved from the Methodist Church, which had been occupied by the evangelist Gilbert Wakefield, to its own "large building of good construction." Outside the city were two public buildings. One was the hospital, directed by Quakers, the other an almshouse where about 250 patients, paupers, foundlings, and various sick were kept at public expense. Castiglioni, after visiting from Montreal to Savannah, concluded that "the progress of Philadelphia, settled by Quakers, as compared with other older cities, proves clearly how much influence simplicity of customs has in promoting the welfare of a newly populated country."[528] John Adams had been impressed with Philadelphia's "charitable public foundations." He had, with other New Englanders who had grown up in a sparse economy, been upset by the "mighty sinful feasts" he and other delegates to the Continental Congress had partaken of in the homes of his more affluent hosts.[529]

Philadelphia was, however, "an island in the midst of poor roads," and there was the weather to endure. During the days of summer when the mercury rose to 86 to 93 degrees, according to a visitor to the city:

No one stirred out of doors that was not compelled to do so; those that could make it convenient with their business always walked with umbrellas

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525 Betts, *Jefferson's Garden Book*, 349.

526 Harriet Roberts, M.S. Thesis, School of Library Science, Columbia University, 1932.

527 MHS.

528 Pace, *Castiglioni*, 225–226, 268–269.

529 Bell, "Boston," 161.

to shade them from the sun; light white hats were universally worn, and the young men appeared dressed in cotton or linen jackets and trowsers; every gleam of sunshine seemed to be considered as baneful and destructive; the window shutters of each house were closed early in the morning, so as to admit no more light than what was absolutely necessary for domestic business; many of the houses, indeed, were kept so dark, that on going into them from the street, it was impossible at first entrance to perceive who was present. The best houses in the city are furnished with Venetian blinds, at the outside, to the windows and hall doors, which are made to fold together like common window shutters. Where they had these, they constantly kept them closed, and the windows and doors were left open behind them to admit air. A very different scene was presented in the city as soon as the sun was set; every house was then thrown open, and the inhabitants all crowded into the streets, to take their evening walks, and visit their acquaintance. It appeared every night as if some grand spectacle was to be exhibited, for not a street or alley was there, but what was in a state of commotion. This varied scene usually lasted till about ten o'clock; at eleven there is no city in the world, perhaps, so quiet all the year round; at that hour you may walk over half the town without seeing the face of a human being, except the watchmen.

I observe now that meat can never be kept, but in an ice house or a remarkable cold cellar, for one day, without being tainted. Milk generally turns sour in the course of one or two hours after it comes from the cow. Fish is never brought to market without being covered with lumps of ice, and notwithstanding that care, it frequently happens that it is not fit to be eat. Butter is brought to market likewise in ice, which they generally have in great plenty at every farm house; indeed it is almost considered as a necessary of life, in these low parts of the country. Poultry intended for dinner is never killed till about four hours before the time it is wanted, and then it is kept immersed in water, without which precaution it would be tainted. Notwithstanding all this, I have been told, that were I to stay in Philadelphia till the latter end of July or beginning of August, I should find the heat much more intolerable than it has been hitherto.[530]

In spite of modest dress, summer heat, the lack of modern facilities, and with only lamplight for evening reading and writing, we cannot help but marvel at the accomplishments of our early intellectuals.

Philadelphia Hospitals

Barton became attending physician to the Almshouse in 1791, about a year after becoming professor of natural history and establishing his own practice. The Almshouse along with the Philadelphia Dispensary filled "a varied routine of beneficient functions in affording shelter, support and employment for the poor and indigent, a hospital for the sick, and an asylum for the idiotic, the insane and the orphan."[531] In general it cared for the "rabble." Pennsylvania Hospital admitted the "industrious poor," those who showed a decent respect for the "work ethic." "A practice that seems rather ghoulish" was the rule requiring poor patients to post security against funeral expenses should they not leave the hospital alive. Such nominal surety for John Bryan, a poor person, was a pair of buckles, or for a poor sailor, a chest of clothes. This rule was repealed in 1798. The Almshouse discharged one patient

530 Weld, *Travels*, 251–254. Mease, *Picture*, gives a detailed account of the city.

531 Quoted in Jackson, *Encycl. Philadelphia*, 60.

described in its records as "one of the lowest kind." Nathanial Cope considered "another of those worthless scoundrels who there is no possibility of keeping in or out and who continually makes a mere slipper of this institution to their own conveniency."[532]

The number of admissions to the Almshouse increased from 78 in 1790 to 176 in 1800, the year in which Barton and Dr. Thomas Parke were admonished not to admit the terminally ill.

For most of his career, Barton served patients at the Almshouse. His attendance at a business meeting was solicited on 22 June 1804 by Job Wilson, Manager. He also reported to Barton two case histories of gum guaiacum that had been administered for chronic rheumatism. P. McKell, Steward for the Board of Managers, on 18 January 1806 requested that Barton submit his bill for services. One "exact copy" for such a request survives whereon Barton indicated that he was "one of the late physicians at the Almshouse," and on the verso recorded a bill of "XX dollars."[533]

One almshouse patient in for a venereal disease expressed in a carefully worded dictated letter to the hard-pressed physician at 241 Chestnut St. his feeling of neglect from too infrequent visits:

> *J. Story presents respectful Complts. to Dr. B. & begs leave to remind him that he had the honor of addressing a few lines to him &c But which remains unanswered.*
>
> *J. S. thinks it his duty to advise Dr. B. that his medicine operates to a wish, for he already discovers the irruptive spots assume a milder type, that is, less purple & livid, and the itching & smarting abates fast. No cathartic effect is yet discover'd, and all seems to go on to a wish. If any change for the worse Dr. B. shall be immediately apprisd of it. From a small act of disobedience to the rules of the house J. S. is prohibited from doing himself the honor of waiting on Dr. B., which is very unpleasant; and would be very thankful (as verbal Communications are much more Satisfactory to physician and patient than on paper) if Dr. B. would be so kind as to drop a few lines to the board stating the necessity of frequent interviews.*
>
> *J. S. now entertains the pleasing hope, that, under the auspices of a benign providence, the Skill & polite attentions of his physician, together with his own Steady & Strict adherence to what is prescribed, that in a few weeks he may be free from all morbid affection, and that if any remains of venerial virus, or other peccant matter is in the System it may be completely irradicated. Almshouse 3d Octr. 1812.*[534]

Pennsylvania Hospital had been chartered in 1751 through the efforts of Benjamin Franklin and Dr. Thomas Bond. Here the earliest lectures were given in its wards, and Bond operated before entranced students in its amphitheatre. In Barton's day the Philadelphia Hospital, City Almshouse, and the House of Employment occupied a commanding site facing Spruce and Pine Streets, bounded by Eighth and Ninth Streets. In 1767 the two-story buildings admitted altogether 284 persons.[535]

When Barton's nephew, W. P. C. Barton, was a medical apprentice at the hospital after his graduation from college and for four months in 1809, what impressed him particularly were "two rows of lofty sycamore trees [that] surrounded the walls and reared their stately heads even as high as the spires of the building...a showy and enticing garden," and a vegetable

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532 Williams, "Industrious Poor," 431-443.

533 Barton papers, APS.

534 Barton papers, APS.

535 Jackson, *Encycl. Philadelphia*, 60.

garden in the rear of the building. At this time it was in the country and near the woods. W. P. C. Barton viewed it as "an extended pile of buildings of striking appearance, though mixed and faulty architecture." It is little changed today. Within the hospital there was a "splendid theatre," a veritable vortex of shallow seats hovering over the dissecting arena. After all, to watch the skilled surgeon at his gory task, sitting was barely essential for the engrossed students straining in their seats. In 1790 the managers of the hospital requested Dr. John Coakley Lettsom of London to purchase medical books for the library (Figure 19), a task he willingly assumed. By 1801 the library contained 1700 volumes, augmented by the gift of 142 books by Sarah Zane, the remnants of the library of William Byrd III of Virginia, books that had not been purchased at the general sale.[536]

The role of Pennsylvania Hospital was ably sketched by Barton in a letter relating, no doubt, to state funding, addressed to:

Alexander Scott, Esquire
Member of the Assembly of the State of Pennsylvania, Lancaster
Dec. 19, 1799

Dear Sir,

I take the liberty of writing to you by my friend Mr. Samuel Coates. He goes to Lancaster with some other gentlemen, as a committee of the Pennsylvania Hospital. The managers of that institution ask nothing which they have not asked before. I know you must be acquainted with the nature of their request. It is not because I am a physician of the hospital that I speak in its behalf; though indeed, my being a physician to it enables me to speak with more confidence on the subject. A very mistaken notion relative to the hospital has gone abroad. It has been said, that its benefits are very partially distributed. This is so far from being the case, that I do not hesitate to say, that it is one of the most impartial institutions in the world. I have known it since the year 1783, and I am confident that persons residing out of the city of Philadelphia, and in every part of the state, are as readily received into it as the inhabitants of the city. It is, most strictly speaking, a national hospital.

The public, in general, are not, perhaps, acquainted with all the advantages which the sick and distressed derive from this institution. Besides the patients who are received into the hospital, there is a very great number of sick who go under the number of out-patients, as receiving medicine & advice gratis, at their own houses. The committee will, doubtless, lay before your house documents relative to the number of these out-patients.

Permit me, Sir, to add, that whilst the Pennsylvania Hospital has always been thought one of the most useful and important public institutions in Pennsylvania, the legislature, by affording it assistance, cannot but be thought to do an act which will reflect honour upon them, whilst it will tend to diminish the quantity of evil and misery among us. Be so good as to make my respects to Mrs. Scott, and believe me to be with respect & regard, Dear Sir, Your very humble servant, &c. Benjamin Smith Barton[537]

Samuel Coates, highly esteemed by all, was elected a manager in 1785 and resigned after serving the hospital forty years and four months, the longest record to the year 1850.[538]

536 Wood, *Hospital*, 80; Pepper, "Barton," 402; Bell, "Hospital."

537 Barton papers, APS. His copy.

538 Personnel of Pennsylvania Hospital as taken from *Census Directory* (1811), 418, reflect in occupation and interest, the diversity implicit in that historic institution:

Thomas Horsfield, who had served as a medical apprentice before sailing for Java, mentioned Mr. Coates as the first of those friends he wished to be remembered to in Philadelphia when he wrote to John Vaughan from Batavia 3 September 1803.[539] Medical apprentices to the hospital, besides assisting preceptors, also carried out the duties of the apothecary from 1787 until 1821.

"The reception and cure of lunaticks" joined with "relief of the sick and poor," thanks to Rush, gained public approval from the early years of the hospital's operation. Amos Gregg sought Barton's aid in having the deranged son of a friend admitted.[540] Alcoholics on occasion were housed with the insane as described in Samuel Ewing's letter to Barton of 27 September 1807.[541]

In 1794 Henry Wansey had found the lunatics to be "chiefly Irish" and "mostly women." In 1810, however, Rush believed the majority of the seventy patients were men.[542] His eldest son John was committed in February that year.[543]

Philadelphia physicians displayed confidence and optimism in their report of the prevailing diseases treated at the charitable Quaker institution, the Philadelphia Dispensary, during the winter months of 1803–1804. This institution had been established through the efforts of Dr. Samuel Powel Griffitts[544] in 1786. He was Secretary of the Board, and he and Wistar were attending physicians. Shippen, Kuhn, and Rush, were among consultants. "For the benefit of this charity" on 8 February Dr. Moyse had lectured in University Hall on Chemistry and Natural Philosophy, charging a "half dollar a ticket."[545]

Of the 512 persons treated at the Dispensary in the winter months of 1803–1804, there were reported sixty-four cases of syphilis, the most treated of the seventy-two ailments listed. Fifty-nine were "cured." With thirty-four cases, pneumonia was the second disease—twenty-six survived, only one died. Thirty-two of thirty-three patients recovered from catarrh. Four of twenty-eight "rheumatissmus" patients were "relieved," the others probably suffered on. All eleven were relieved of gonorrhea (the treatment of which had been bread and butter for Linnaeus in his practice in Uppsala).[546] The one case identified as herpes was "cured," and treatment succeeded in twenty-two of twenty-three cases of worms, one patient dying. Eighty-five illnesses were unidentified, and, of course, for this winter season there was no yellow fever.[547] Although Barton did not serve the Dispensary, its records contribute to the picture of health care in Philadelphia during his time.

Managers: Samuel Coates (1748–1830), Quaker merchant, philanthropist, served 1785–1825; father of Benjamin H. Coates, M.D. (1797–1881). Zaccheus Collins (1764–1831), Quaker merchant, philanthropist, active in ANSP, Pennsylvania Horticulture Society, APS, trustee University of Pennsylvania, and patron of Thomas Nuttall on his trip to Arkansas in 1817. Josiah Hewes (1781–1812). Pattison Hartshorne (1788–1823), merchant, brother of Joseph Hartshorne, M.D. (1779–1850). Paschel Hollingsworth, served 1800–1812, relative of Levi Hollingsworth (1739–1824), prominent Philadelphia merchant. Joseph Lownes, goldsmith, served 1804–1820. Edward Penington (1726–1796), Quaker, sugar refiner, father-in-law of Barton. Edward Penington (1766–1834), brother-in-law of Barton, Quaker, sugar refiner. William Poyntell (d. 1811), merchant, 1806–1811. Lawrence Seckel, merchant, 1790–1820. Thomas Stewardson (d. 1841), 1808–1841.
Treasurer: Joseph S. Lewis, served 1799–1826.
Physicians: Thomas Parke; Philip Syng Physick, Quaker; Benjamin Rush; Thomas Stewardson; Barton.

539 Vaughan papers, APS.

540 Barton papers, APS. Bristol, 13 August 1805.

541 Barton papers, APS.

542 Jeremy, *Wansey*, 40, fn.

543 Butterfield, *Rush*, 1035–1036.

544 Samuel Powel Griffitts (1759–1826), Philadelphia-born Quaker, M.D. University of Pennsylvania, 1781, had studied under Adam Kuhn and at Edinburgh. He was a member of the Philadelphia dispensary, a charter member of the College of Physicians, and a member of the APS. His name was sometimes spelled "Griffiths." Ruschenberger, *Physicians*, 229, Carson, *History*, 93, 102.

545 Carson, *History*, 102, fn.

546 Wilfrid Blunt, *The Compleat Naturalist, a life of Linnaeus* (London & New York, 1971), 131.

547 *Philadelphia Medical Museum 1* (1805): 91–92.

To control the qualifications of practicing physicians in Pennsylvania, there was an attempt in 1806 to assure that physicians or surgeons be graduates of "some University or College in which the branches of medicine are taught by different professors," or that they stand examination before competent persons. This proposal, however, did not impress the "political rulers," and so was not put into effect.[548]

During Barton's day, Medical School lectures were given in Surgeons' Hall (Figure 20) on Fifth Street, below Library, now Sansom Street. For a few years from 1789 it occupied a part of the American Philosophical Society building, but in July 1800 it was moved to Ninth between Chestnut and Walnut, although anatomy and chemistry were still taught on Fifth. In 1807 the Medical School moved to its present location. Lectures involving demonstration were delivered at the hospital.

Barton's Medical Practice

Late in 1789, about the time of his assuming his position at the College, fortified by his experiences as Shippen's apprentice and whatever first aid he had practiced on his western trip, and filled with the ideas he had gleaned from Edinburgh professors, especially Cullen, and from Lettsom and James Edward Smith in London, Barton opened his medical practice. It was essential that he join this venerated profession, since it was assumed that to teach medical pupils in the College one would be a practicing physician. This profession was closest to his interests in botany and other natural history, and it would be his financial mainstay. He became, according to his nephew, a sensitive, caring practitioner, well-read, quick in diagnosis, "soothing in his behaviour to patients," but cautious in administering prescriptions.[549] Remember that in Barton's day there was no stethoscope, no clinical thermometer.

He was continually experimenting and encouraging his pupils to experiment on the possible benefits of American plants. His health was not equal to his carrying out all his ambition demanded, and his devotion to natural history limited time for his practice, which consequently never grew to be large. Yet by reputation through the years he was esteemed to be among the leading physicians by members of his profession in Philadelphia, New York, and Boston.

In his ambition to make known American plants with potential medical use, Barton knew it was essential that in order to pursue any subject in a serious scientific and satisfying way it was vital to acquire the necessary literature. Always in the back of his mind there were the haunting sums he must repay to the Medical Society in Edinburgh and to the numerous friends from whom he had borrowed. Despite these debts and the costs of his embryonic practice, a bibliophile's urge impelled him to take advantage when a rare opportunity appeared. The library of the William Byrds had been on the market for some time, now with John Pemberton, Barton's former shipmate, as agent. Was it from this sale that Barton obtained Eliot's *Indian Bible*,[550] which he believed (*New Views* (1798), xii) was the second edition?

A further opportunity for reference titles at reduced prices came in about 1800 when the widow, Sarah Zane, held a final sale of books mostly in Latin. Barton, with debts still unpaid, was to go further into debt for such titles as Richard Ligon's *True and Exact History of the Island of Barbadoes* (London, 1673), Robert Morison's *Hortus Regius Blesensis* (London, 1669), and Tournefort's *Institutiones Rei Herbariae*, ed. 3 (Paris, 1719). A number of the titles had belonged to Rev. John Banister, who had worked in the James River area in Virginia from 1679 until 1692, aiming to produce a natural history of this new-found land.

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548 Carson, *History*, 105.

549 W. P. C. Barton, "Barton," 33.

550 John Eliot, *The Holy Bible: containing the Old Testament and the New. Translated into the Indian Language* (Cambridge, Mass., 1663). Wolf, "Byrd Library," 31, wonders who got Eliot's Indian Bible for £3.

From his youthful days in Philadelphia, when Barton sent "several books" and his self-portrait to Reverend Andrews at York Academy and his days in Edinburgh, London, Paris, and Amsterdam, Barton had acquired books, and so it was to be expected, and it was essential, that he should seek literature otherwise lacking in this new nation. Over the years his medical pupils, family members, favored correspondents, and friends as far away as Bethlehem in Pennsylvania, Boston, and New York, would benefit from access and use of his books. For books purely medical he mostly referred to the Pennsylvania Hospital Library, which was steadily growing through the cooperation of friend Lettsom in London.

Since Kuhn, Morgan, Rush, Barton, Wistar, and other early Philadelphia physicians had studied under Scotland's most renowned medical teacher, they were greatly influenced by him. William Cullen believed and taught that life was a function of nervous energy and that disease was essentially a nervous disorder. He thus considered, for example, diabetes a disturbance of the nervous system. It was he who gave the name mellitus to the malady. "The excessive production of urine characteristic of diabetes may have reminded Cullen of the polyuria met with in convulsive disorders."[551] Cullen considered sugar a cure and prescribed it generously. Barton was to learn otherwise, and so he added a note to Cullen's discussion when he published his *Cullen's Treatise* in 1812:

> *Late observations have sufficiently established a very important fact, unknown to Dr. Cullen, that sugar is an improper article of diet in diabetes, evidently increasing the quantity of saccharine matter in the urine, and thereby increasing all the chances of a fatal termination of this formidable disease.*[552]

On "Hydrocephalus internus or Dropsy of the brain" Barton added: "My own experience" does not support success of the use of mercury in combating the effects of this common disease.[553]

Competing for influence among physicians of the day was Dr. John Brown (1735–1788), who had been a student in Cullen's class at Edinburgh while Rush was there. Erasmus Darwin judged Brown's *Elementa Medicinae* (Edinburgh, 1780, with later editions) "a work (with some exceptions) of great genius." The quantity of stimuli, not the quality, Brown considered more decisive in maintaining good health. In lively prose he admonished:

> *Give stimulants to the patients labouring under the inflammatory sore throat, and you kill them; bleed, purge, vomit, and starve, in the gangrenous case, and you ensure the same fate. Such, however, are the diseases, that systematics, nosologists, and other strangers in the city of nature, have, from their ignorance of the place, in spite of their natural distance, brought all together. As soon will Mile-end and Knightsbridge meet; as soon will London place itself on the Calton-hill, and become an elevated suburb of Edinburgh.*[554]

Thomas Beddoes[555] dedicated "To the ingenious, the candid, and humane, the following production of unfortunate genius" his revised and corrected edition of *Elements of*

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551 N. S. Papaspyros, ed., *The History of Diabetes mellitus*, ed. 2 (Stuttgart, 1964), 16–17.

552 *Cullen's Treatise* (1812) 2: 283.

553 *Cullen's Treatise*, ibid. 318.

554 Brown, *Elements*, 83–84. On Brown, Garrison, *Hist. Med.*, 314.

555 Thomas Beddoes (1760–1808) of Shiffnall, England, founder of the "Pneumatic Institute" at Clifton for the treatment of disease by inhalation of oxygen. He was assisted by Humphry Davy. Garrison, *Hist. Med.*, 330; Butterfield, *Rush*, 753. Brown, *Elements*.

Medicine.[556] Samuel Bard[557] wrote of Brown, as "learned and ingenious but at the same time bold and dogmatic."

"As Newton discovered the laws of inorganic matter, Brown illuminated the great plain laws of life," paraphrasing Christoph Heinrich Pfaff, editor of German translations.[558] Within a single decade in Germany alone over 200 books for and against Brunonian medicine appeared. In Brown's view, life is a condition enforced by stimuli. The body's ability to react to stimuli he called excitability ("incitabilitas"), and that ability, noted in the marrow of the nerves and muscles, is present in all parts of the body. This is what distinguished the living from the non-living. Good health may be impaired by *excess* of powerful stimuli (food, heat, exercise, "violent passions of the mind," etc.), but insufficient stimuli he named "asthenia." Predisposition to disease was part of any disorder.[559] One should use the "efforts of nature" for the cure of any disease, a precept that influenced Barton, who recognized that certain diseases ran a natural course despite medication. For excesses Brown recommended opiates. This "unfortunate genius" over-prescribed for himself and the abuse of opium and alcohol brought on his death.[560] One student preserved in his class notes that Doctor Barton "wept as usual over the Miseries and Misfortunes of Dr. Brown when on the subject of opium, and erected a verbose monument over the ruins of his exalted genius. The same day [about 19 January 1812] we had a Phillippic from Dr. Rush. I was the more surprized at this as it seems to me that the basis of the two systems [Brown's and Cullen's] is the same."[561]

Rush, at first attracted to Brunonian concepts, modified his approval, developed his own system, and in later years openly differed with Brown's concepts.[562]

Barton's interest in Brunonian medicine is demonstrated in many of the theses of his pupils. W. M. Alexander selected sympathy as a subject; J. H. Camp, the use of mercury in fevers; R. Carter, opium; Wm. Darlington, the mutual influence of habits and disease; R. W. Hall, the use of electricity in medicine; H. Jackson, the efficacy of certain external applications; E. L. McCall, on the mutual subservience of different parts of the body; and J. Parrish on the influence of the passions. Such topics recall Brown's dicta, such as the importance of the physician's use of the healing efforts of nature; or that the source of disease be viewed from a holistic or constitutional approach, that it is not resident merely in a local tissue.

With Doctors Kuhn and Wistar, Barton was in agreement with some of Brown's beliefs, but he still esteemed Cullen sufficiently to recognize the practicability of publishing an American edition of Cullen's *Treatise of the Materia Medica* (Philadelphia, 1812, 2 vols.) with his own comments. All three doctors particularly disapproved of the profuse bleeding and large doses to purge, or causing violent vomiting, as practiced by Rush and his followers. Barton still bled patients on occasion, that having been part of his medical education, but less copiously and less frequently than others. Over the years his reputation rested on his more cautious practice.

Barton's practice did not have his complete devotion, for his heart lay with natural history. The time spent in observation and recording natural phenomena reduced the income from his profession.

> *In the Spring of 1793, my pecuniary difficulties had become very great and pressing. I had little or no business, and many enemies, or persons*

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556 See Brown, *Elements*.

557 Samuel Bard (1742–1821), New York physician, father of Barton's step-mother. W. L. Burrage in *DAB*; John B. Langstaff, *Doctor Bard of Hyde Park...* (New York, 1942), portr.

558 As *System der Heilkunde* (Vienna, 1796, for example).

559 G. Rath, *Jour. Hist. Med. Allied Sci.* 15 (1960): 75. On p. 76 Rath presents Humboldt's criticism of Brown.

560 Garrison, *Hist. Med.*, 314–315.

561 Bell, "Boston," 174.

562 Shryock, *Medicine*, 69.

whom I had, as I supposed, good reasons to consider enemies. Some of these were physician[s] of eminence and influence. About this time, I broke up housekeeping, and went into lodgings but this was no improvement to my business. In the midst of my distresses, I actually meditated going to sea, in an armed French vessel which was then lying in the Delaware!! What diverted me from this schemne, I don't well recollect.

His "pecuniary difficulties" had led him to solicit a loan from George Washington on 1 June 1793 for $60.00. How could he forget what had diverted him from his desperation? He continued his reminiscences:

The yellow fever which broke out in August 1793 and continued its desolating ravages for three months was advantageous to my advancement in life. It certainly suspended some of the pecuniary persecutions to which I had long been subject. For the calamity being a great one, the minds of many were softened. In common with the other physicans who continued in the city, I was not without business. The number of patients was even considerable, and some of them were opulent or in good circumstances. About the middle of September, I was seized with the fever and continued very ill with it for a considerable time. Upon finding myself capable of going out, I again resumed business, and had the justification of finding myself, at the end of October, in possession of some money on my books, and in possession of some consequence as a physician. The emoluments of my practice relieved me from a good many of my pecuniary difficulties.[563]

One of his professional difficulties had been that although elected to the Pennsylvania Hospital Dispensary in January 1791, the following January he was chided for allowing pupils to write prescriptions, but he was re-elected in August. In September the board minutes read: "It was resolved that the board having already informed Doctor Barton of their opinion regarding his conduct, by their minutes of August 25th, they will for the present suspend their proceedings in the business in the hope that what has already been done will prevent any future cause for complaint." The same entry applied to 12 January 1793. Barton had no admissions to the Hospital during 1791–1793. His zoological contributions to Pennant had consumed his time.

On occasion he consulted with the physician whom he most trusted, and so, for what was probably his own illness while visiting relatives in Lancaster, Barton wrote to Dr. Kuhn in Philadelphia, who answered 29 September 1797:

Dear Sir,

I have used common Salt repeatedly in Haemophysis and occasionally with advantage. I have also found Nitre beneficial in doses of 15 & 20 grains combined with an equal quantity of gum arabic. I prefer the Nitre to the Salt when there is considerable fever.—I invariably recommend blisters either to the Arms or Legs, and when there is pain in the Thorax, I order one to the Sternum or Side. When the cough is troublesome & cannot be allayed by holding a lump of gum arabic in the mouth, or, by some other stimulant, I recommend opium [Laudanum] *in a solution of gum arabic with a small quantity of antimonial wine, to allay the cough, and have often observed favourable effects from this medicine, and never any disadvantage. Cool air & a very low regimen are, I believe, generally necessary in pulmonary as*

563 Barton, miscellaneous papers, APS.

well as all other active haemorrhagies—The bleedings are repeated as often as the oppression or pulse may indicate. I am respectfully Your most obedient humble Servant. A. Kuhn

[P.S.] *Mr. John Hubley of Lancaster was completely relieved some years ago of Haemophysis by common Salt; I administered* [?] *finely powdered every 2 hours in a little water. He did not know what remedy was prescribed for him.*[564]

Whether Barton ever adopted Kuhn's treatment for worms, we have not discovered, but in lecture notes Kuhn suggested garlic as an anthelmintic applied externally to navel and soles of the feet, where it produces a "strong disagreeable odour to the Worms which is communicated to them by the absorbing vessels & thereby forcing them from their hold but does not kill them." They will better "yield to medicines which will destroy and carry them off."[565]

The year 1798 began busily. Thomas Jefferson was elected president of the American Philosophical Society, while Barton, Peale, and Dr. Robert Patterson still served as curators. Barton had been chosen Annual Orator in February of the previous year, and now on 21 February he delivered his "Collections for an Essay towards a Materia Medica [Part I]," but instead of submitting it for publication in the Society's *Transactions*, since he foresaw delays in its appearance, he had it published separately, dating the preface 12 March, and presenting a copy to the Society on 19 March. There had been no adequate text upon which American physicians and pupils could rely. *Collections* was encouragingly reviewed in *Medical Repository*.

Sometimes it was convenient to barter medical services in exchange for other favors. On 17 May 1806 Barton wrote to John Conrad, bookseller and publisher of, among other titles, the *Philadelphia Medical and Physical Journal*:

Dear Sir, Agreeably to your request, I send the memorandum of the medical account. You said it would be more agreeable to you to be told of the sum, than to receive a formal bill. For my advice in your illness of two of your young fellows, while they lived at Cunyngham's, in 6th street, I think the sum of 90 Dollars will not be extravagant. This will, of course, entitle you to a receipt in full. If you think the sum I mention is high, say so, and we shall not disagree. With much regard, I am, [etc.][566]

Ever recording notes for his numerous planned publications, especially his *Collections*, Barton collected information from physicians while on his field excursions. It was probably in 1802 that he heard of the use of indigo for spasmodic croup and hives from Dr. John Knox, who practiced near or in Winchester. A Colonel Thornton of Culpepper County had assured Knox that the native indigo put into a rag and stirred in water was useful in reducing spasms of croup or hives. Thornton had not tried it on himself, but it produced no "sensible effect" on the patients, though it sometimes caused them to puke, but that was not necessary nor beneficial.[567] Was the "sensible effect" what today we could call a side effect? On another occasion Barton noted that *Scilla maritima*[568] is considered "very beneficial in chronic catarrah," the information from R. E. Griffith. Of *Magnolia acuminata* on Parnels Knob, Franklin County, Pennsylvania, he wrote, "Mr. Riddle, the proprietor informed me that the

564 Barton papers, APS.

565 Kuhn papers, National Library of Medicine, Bethesda, Md.

566 Barton papers, APS.

567 Barton's *Journal*: Negroes, teeth, sheep, bees, turkeys, n.d., HSP.

568 [Red Squill is today known as *Urginea maritima* (L.) Baker, in the Hyacinthaceae. ITIS. IPNI.]

seed vessel of this magnolia infused in brandy, makes an excellent bitter; and that some persons have stopped their agues by taking a draft of this tincture, just as the fit came on."[569]

While visiting relatives, again in Lancaster in 1802, Barton noted:

> *Dr. Houston gave me some account of his practice in the camp fever. He did not bleed, 'the lowest was suffered to rust,' as he expressed himself. He began by giving antimonial diaphoretics, so managed as to cleanse the primae viae. He depended very much upon the Serpentaria,*[570] *of which he entertains a very high opinion (& he thinks it excellent in our bilious fevers); gave an abundance of wine but did not give the P*[eruvian] *bark very extensively, as he had not an abundance of it. He bled one patient, a young man. The affection of the bark in his fever, was very severe, & it appeared to him to be of a spasmodick nature: his dissections showed inflammation & adhesions of the viscera of the abdomen.*[571]

Barton left an intriguing note on a small scrap in his Journal of his trip of 1802, App. I: "Child near my house. 4 powders. each 4 gr. of Jalop and 3 gr. of Calomel."

On a journey to New Jersey in 1806, he wrote directions on 30 June to his wife, Mary:

> *I wish one of the gentlemen to repeat in the most careful manner, Dr. Smith's*[572] *prescription of the Squill-pill. They will find the prescription, in the book. Have them sent in the safest manner.*
>
> *I hope the young gentlemen will make every effort to have the business attended to. About Miss Warner, Mr. Carrell's child, Mr. Wetmore, Miss Stran, Miss P. Rose, & Mr. West's family, I am particularly anxious. When valuable new cases turn up, Dr. Kuhn, Dr. Pak* [Thomas Parke?] *& Dr. Wistar I have no doubt will attend for me.*[573]

Acetate of lead had been used by Barton since 1796 in cases of haemorrhages and lately in a case of obstinate gonorrhea. He usually gave it with opium "with which much larger doses of sugar of lead can be given." So he wrote his former pupil, Thomas Semmes, who published his letter in his *An Essay on the Effects of Lead...* (Philadelphia, 1801). "I am sure that you, who know with what caution I always speak of medicines in my lectures, will not suppose, that I recommend the sugar of lead as a specific for the care of uterine or other haemorrhages...but as a powerful and valuable medicine." He also believed some persons are liable to be injured by small portions, and it does not produce its bad effect until some days later. "I have been fearful lest the patient might suffer from an accumulation of the lead in the system."

Henry M. Gray, another former pupil, wrote from Jerusalem [Mills, Maryland,] 8 April 1807:

> *I can never enough thank you for the information, I have received from you concerning the use of act. of lead–I have used with unexampled success in the Haemorrh. in Diarrhaea & Cholera–I am sorry that I have not kept a register of cases; some of them would not have been uninteresting–I gave a child of six years, last summer, in a case of Cholera, upon which I had previously almost exhausted the whole Materia medica without benefit, six grs. of* [Acetate] *of Lead combined with 2, 6, 8 grs. of*

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569 Barton correspondence f. 134, HSP.

570 *Aristolochia serpentaria* L.

571 HSP. McAtee, "Journal."

572 Perhaps Dr. James Smith (1771–1841) of Baltimore.

573 Barton papers, APS.

Opium in the course of 24 Hours with the most marked good effect—The child was so sensible of relief from the medicine that he frequently requested the attendants to repeat his dose before the time prescribed had elapsed—.[574]

Dr. Samuel Bard, answering a query of Barton's 21 August 1808, wrote that if he remembered correctly the only course in anatomy given before Shippen's was by Doctor Peter Middleton in his father's house in 1749 or 1750. His father, Dr. Vincent Bard of Philadelphia, had kept the "Injected extremities" of a "malefactor" for many years for demonstration to his pupils. Also included was Bard's treatment for croup, which seemed in his time to occur in epidemic form. He thanked Barton for his review of his *Compendium of the Theory and Practice of Midwifery* (New York, 1807), which Barton had written for his *Journal*, calling it "a work of considerable merit."[575] It will, Bard wrote, "I hope do some good—or at least I am certain this or some other which will call the attention of ye inferior Clop of Practitioners, from art to nature in this Branch of our Profession...this was my great object in obtruding my opinions upon the public."[576]

Of Bard in Hyde Park, New York, Sir William Osler has written that he and David Hosack, his partner, had raised the medical profession "above the dead level of a business." Bard shared Barton's and Hosack's enthusiasm for living plants and their uses, and when in Philadelphia he and his father enjoyed Bartrams' Garden. Bard had studied in Professor John Hope's garden, while studying at Edinburgh. He had been an undergraduate at King's College (now Columbia University), then professor, trustee, and Dean of the Medical Faculty. He had known Hosack as an undergraduate at King's College, and with him deplored the failure of the New York legislature to purchase Hosack's Elgin Botanic Garden in 1812. Such a plant source would have been important to King's medical students. Bard was also a friend of Barton's Uncle William Barton.

Bard's letter ends with his concern for Barton's young niece, "my sweet little friend, Hetty White," who was ill with tuberculosis and would not live long. Bard chided Barton for not mentioning her and sent his advice that she be sent to Charleston for the winter. He had heard the concern of Mrs. Barton, widow of Rev. Thomas Barton, and of Polly Thornbury, who was now a maid to Juliana Susanna White. An older relative, even by marriage, may chide a younger.

From Campbell Chambers of Baltimore, perhaps recommended to Barton by Dr. Crawford, came a letter dated only Saturday Eve, though postmarked June, the year illegible, the problem, infection of a broken leg.

Dear Sir

I submit as concisely as possible a statement of the disorder, in all its symptoms and treatment.

The bracing plan was adopted immediately on my arrival here, mercury given to induce a partial salivation and for two or three weeks,—blisters were applied repeatedly, friction with oils; nervine liniment &c used as coadjuster.—The inflammatory character has subsided, vanished, the swelling scarcely perceptible & the contraction appears slowly declining so that at present the limb is so near a right line that it makes angle of probably 175 degrees or possibly 180.—In walking there is no pain, but walking is more fatiguing than formerly and in mounting my horse the weight of the body resting for a moment on the left leg creates a little pain and a tremulous motion that indicates some debility of the part. Can this debility

574 Barton papers, APS.

575 *PMPJ* 3 (1808) Pt. 1: 176.

576 Barton papers, APS.

be owing to a deficiency of muscular or fibrous power or to an improper distribution of power?–I shall rub the part with oils and use the warm bath as you direct until further orders & in the mean time take internally one of your recipes.

I now walk with Mrs. Chambers up & down whole squares and the slight degree of limping in my walk grows less & less observable–

Chambers then tells of advice from other physicians, presumably practitioners in Baltimore:

Dr. Dunkell talked of putting splints to the part to induce it to tend toward a rectilineal position by a force uniformly exerted.–Dr. Mitchell advises weights to the heels in riding or walking, and the pouring of cold water, from a height upon it.–Dr. Donaldson thinks the stimulating quality of cold water useful to strengthen the part; but that the rectilinear position should be first recovered by oils, friction & relaxing things–The flannel is still worn over it and my health is in all other respects, excellent–My strength as great as ever & if (as you will hardly believe) my weight from 115 [lbs.] *was increased to 138 in 15 days, some weeks ago, it is fair to conclude I am not at present much short of my usual weight–148* [lbs.]. *I wish Sir I had something more to communicate than the state of my health and shall take advantage of any incident that may present itself worth ingaging your attention–*

Meantime any further advice you transmit shall be preferred and attended to if not too severe–Mrs. Chambers desires her best Cmpts & believe me Sir I am with profound respect & Esteem Yours truly...

On a scrap of paper, probably as a postscript, Chambers reported:

I do not recollect any alteration either for the better or worse on the re-appearance or total disappearance of Gonnorhea. Neither does Mrs. C.– Had there been any, I having heard that such things are critical &c, must have observed it. Probably gonnorhea is not a simple inflammation, effusion &c but has a kind of poisonous principle which is kindled into energy by stimuli, is latent under an 'antiphlogistic [regimen?]*' and flames out again when the regimen becomes phlogistic–Either this must have been the case or else the rheumatism was merely a symptomatical affection of which there is no good proof.*[577]

Chambers's use of Priestley's terms suggests that Barton had adopted the concepts of "antiphlogistic" and phlogistic in some explanation of influences to his patient.

On hydrophobia, Samuel Preston, of Stockport on Hudson River, north of Hudson, New York, on 20 September 1810 included in a letter:

Two people in the neighborhood have died this Summer with the Hydrophobia. the first a Lad of about 16 had been down on a Raft & was bitten by a mad Cat near Frankford. he returned home the wound grew more & more inflamed he went mad & died in about 10 days after he received the wound. the other was a Labouring Man that attended him–he was not bitten or wounded at all–but tis supposed either took the infection

577 Barton papers, APS.

in his Breath—or through the Pours of the Skin of his hands from the Saliva & wiping of his mouth—the possibility of such a communication your Society may do well to consider & investigate I saw neither of them but believe Doctor Freeman Allen may give a more particular & correct Account,

Thy Friend most respectfully Samuel Preston.[578]

Barton wrote to Winthrop Sargent, 9 March 1812, about a new mineral water that had been recommended. "I have heard much & read not a little concerning the medicine water; it has been used in this city, & with seeming advantage. I think you are a good subject for the medicine: and I pray it may be of use to you. It is a great discovery, if it do only half what we are told it does. But little is to be gotten here."[579]

Another correspondent, John A. Casey of Augusta, Georgia, included in a letter of 1 September 1813 his observation on a new use for a useful plant:

The Gossypium a plant the object of national competition is unfolding daily medical virtues. Where it is so abundant as with us accident has brought it into notice particularly in burns, contusions, and even Gout. A negro child played near a fire had his cloathes burn on him entirely. his mother picking him up & finding thus cruelly burnt threw him in to pile of cotton while she ran to notify her mistress; on their return in half an hour the Child was asleep. Many cases of its immediate relief and successful application have come within my own observation. & one case within my own family. It gave relief and entirely removed pain and soreness in a gentleman who in kicking hit his instep, and could not move his leg in an hour after. The same evening after applying the Cotton he walked out, & the next day wore his boots. In two young gentlemen labouring under severe gout it afforded such relief that in a couple of days from being in excruciating agony they could walk out in boots. These facts have come within my own observation & knowledge—

I will occasionally communicate such facts & observations as may from time to time offer; Accept Sir the assurances of my great delight at the intelligence of your filling the seat of the Philadelphia University of the Institutes and Practice of Physic, and of my good wishes for a continuance of health to discharge its functions. With great regard Yr. [illegible] *John A. Casey*[580]

In what form Casey applied cotton is not stated. What had Barton concluded from such portrayals?

Nephews as well as brothers were importuned to send in medical observations. Robert R. Barton, army surgeon stationed at Erie during the latter part of the War, wrote 22 March 1814 in part:

We have had a disease prevailing here all the Winter, which has been very fatal. I take it to be much the same as Dr. Cullen describes under the head of Peripneumonia notha. It generally comes to a crisis in three or four days, and if the most promp measures are not used the first day or two, it for the most part proves fatal. The same Disease prevailed to a great extent along the Frontiers last Winter, and from its mortality at Buffalo, was called

578 Barton papers, APS.
579 MHS.
580 Barton papers, APS.

the Buffalo Fever. At this place it was frequently called a Typhus, though the Disease comes on with violent pain in the Head, side or breast, generally a combination of all, accompanied with cough. I have found Bleeding in every case injurious, in many fatal. In the first instance I prescribe pretty strong Emetics and afterwards the liberal use of Antimonial, with Blisters to a great extent. This course I find the most successful, but from any mode of treatment I am sometimes almost inclined to doubt the powers of Medicine, and give up. This Country that I had an idea was one of the most healthful in the world, I find to be the most sickly. The Indians say it was remarkable for healthyness, until the last two years, since which it has been quite the reverse. This I cannot account for.

Please remember me to Aunt and family, and all our Friends.

Your Affectionate Nephew Robt. R. Barton[581]

Barton published numerous medical notes in his *Philadelphia Medical and Physical Journal* or added his own comments to articles submitted by other doctors, as for instance to one by Dr. George Williamson on the successful use of acetate (sugar of lead). In a note, the editor (Barton) added that he had successfully used sugar of lead combined with opium and ipecacuanha to curb hemorrhage.[582] He also used the substance "lately in a case of obstinate gonorrhea."[583] To a note on hydrophobia that a Dr. Branneman of Lancaster contributed to the *Journal*, Barton added that he had tried an injection of tobacco, since it is known to relax spasms and has been used to advantage in tetanus.[584] He did not comment on whether that last patient had survived.

An undated letter from Elisha Hall tells his physician of his condition:

Doctor Barton, Respected friend:

I am very poorly and wish thee to come out if it suits thee, but if not to send me word what I shall do. My stomach is affected with them dreadful drawing pains, my head far from well. I have some fever, and occasionally my limbs swell and the blood seems to stagnate in them, I have much trembling all over me and very weak spells with much heat.

Can the bark be any way prepared that it would not affect my stomach, or does thee think the bark root will help me. It did last fall; I mention these things for fear thee may not think of them.[585]

Whether Barton drove to the country and was able to help his patient is not recorded. Here is an example of the prescriptions given for some complaints:

To Edw. Lowbee, Dr[586]

1811 April 2	*200*	*Blue Pills*	*1.5*
	3	*bottles calcined magnes.*	*1.2*
8-Jun	*2*	*bottles " "*	*0.8*
1-Jul	*2*	*" " "*	*0.8*
27-Jul	*50*	*blue pills*	*0.4*
21-Aug	*300*	*" "*	*2.25*

581 Barton papers, APS.

582 *PMPJ* 1 (1805) Pt. 2: 100.

583 In Semmes, *An Essay on the Effects of Lead...* (Philadelphia, 1801), 57.

584 *PMPJ* 2 (1806) Pt. 1: 130–131.

585 Barton papers, APS.

586 Barton papers, APS.

Sept. 26	*100*	" "	*0.75*
Oct. 7	*100*	" "	*0.75*
Nov. 19	*100*	" "	*0.75*
			$9.20

We can only hope the Blue pills were as efficient placeboes as some of the pink pills dispensed are today!

An interesting comparison of Barton's use of his Commonplace Journal notes on a topic, with his finished discussion: "Mrs. M. Barton related to me the case of a negro-man who was entirely cured of a consumption of his lungs by giving him to drink, for a considerable time, milk in which was boiled the root of the recent Indian turnip (Arum triphyllum). The milk was strongly impregnated with the acrimony of the root." In his *Collections* he reproduced this as:

> *Arum triphyllum.*[587] *The recent root of this plant boiled in milk, so as to communicate to the milk a strong impregnation of the peculiar acrimony of the plant, has been advantageously employed in cases of consumption of the lungs. I have heard of one case (that of a negro man in Virginia) who was completely cured of a pulmonary consumption by continuing to take, for a considerable time, milk in which the root of the Arum had been boiled. It would certainly be worth trying this simple preparation in some cases of a disease which so generally baffles the powers of all our medicines, and the skill of our best physicians. I am not ignorant, that within the period of a very few years, the disease of consumption has been supposed to be deprived of some of its terrors; but I must add, with real regret, that notwithstanding the high ecomiums which have been bestowed upon the Digitalis as a remedy for this disease...yet (with one exception) I have not been able to effect a single cure by means of Digitalis...Candour compells me to add, that my own experience with Digitalis in consumption has been less than that of several other practitioners in Philadelphia, some of whom entertain a more favorable opinion of the medicine, as a remedy for consumption than I do.*[588]

A grateful patient reported what appeared to be a successful ministration. Benjamin Henry Latrobe wrote to his son, Henry, 24 September 1814:

> *I am this very evening writing for the first time after a very severe attack of my old Hemicrania. It has hitherto generally lasted me for three weeks, but I have got over it, after 10 days severe suffering. Dr. Bartons remedy, Magnesia, appears to be the best I have yet discovered. Every other from Blisters & Bleeding & starving to wine & Laudanum had been tried in vain for many Years.*[589]

From South Carolina came an appreciation of Barton's attempts to improve the medicine of that era. Dr. David Ramsay on New Year's Day 1800 expressed his sentiments:

> *I cannot close my observations on the subject of medicines without congratulating you, that a handsome beginning has lately been made* [1798]

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587 [*Arum triphyllum* L., now *Arisaema triphyllum* (L.) Schott. IPNI.]

588 *Collections*, ed. 1, part 2; in Lloyd, "Barton," 29–30.

589 Latrobe *Letterbooks*, Maryland Hist. Soc.

towards an American Materia Medica by Dr. Barton of Philadelphia. This well informed and indefatigable interpreter of nature, has prosecuted, and continues to prosecute this subject with so much industry and ability, as to give us ground to hope, that at no very distant future day, remedies for our endemical diseases will be found in our own country.[590]

On Smallpox Vaccination

Barton wrote himself a memo dated 11 April 1796, "This day I innoculated the young Wyandot-Indian, from Sandusky."[591] This was the method of introducing a tiny bit of smallpox virus from an infected human into the arm or leg of another. After a few days, the recipient recovered and was free from further infection. But the method was not always successful. Rush had observed patients recovering successfully in the "Inoculating Hospital" in London, while a medical student in 1768. Although he reported on *The New Method of Inoculating for the Smallpox* (Philadelphia, 1781), Philadelphia physicians had not responded as he had hoped. Cutler, on the other hand, promoted the practice with some success in Massachusetts.

Meanwhile, in England, Edward Jenner (1749–1823),[592] pupil and assistant to Dr. John Hunter, now practicing in Berkeley, Gloucestershire, had noticed that dairy-maids' hands often developed pustules from the teats of cows infected with cowpox, and they appeared immune from smallpox. After experiments, he reported *Inquiry into the Cause and Effects of Variolae vaccinae* (London, 1798), a work that *The British Critic* (London 1803), 7, reviewed, declaring it "the most important medical discovery which has ever been made."

Dr. Lettsom, who had championed Jenner's discovery, sent Dr. Benjamin Waterhouse, fellow Quaker at Harvard, a copy of Jenner's pamphlet, and Waterhouse by the beginning of 1799 had a supply of the vaccine from Jenner.[593] The lymph was sent on threads of cotton saturated with the matter, dried in air, then enclosed in a bottle with a glass stopper. On 8 July 1800, Waterhouse successfully vaccinated his young son, Daniel, and tested results. He sent some of the vaccine to President Jefferson, who used it at Monticello, and who, in turn, sent some to John Redman Coxe. Waterhouse's *A Prospect of exterminating the Small-pox* (Boston, 1800–1802, 2 parts) scarcely preceded Coxe's *Practical Observations on Vaccination: or Innoculation for the Cow-pock.* (Philadelphia, 1802). From Cambridge 22 April 1801, Waterhouse had written to Lettsom, "Is it not extraordinary that not a single attempt has yet been made with this innoculation in Pennsylvania, or anywhere to the Southward of New York, and by one person only in Virginia where I sent it [to Jefferson]?"[594]

Had Barton by this time received Lettsom's favorable account in his letter 26 August 1800 telling him that "Vaccine inoculation is becoming more and more general in England" and that probably no other method will be adopted?[595] Also convincing was the letter from Louis Valentin from Nancy, France, 21 March 1801, that he was sending a copy of his *Traité*.[596] "Cowpox vaccination" is now rapidly replacing inoculation, its "older sister," he wrote Barton. He has helped introduce it.[597]

Soon Barton was requested to supply vaccine for physicians in outlying districts. On 17 November 1803, George Reidenauer of Myers Town, Pennsylvania, sent a letter with Squire Myers wishing to obtain "a very small quantity of said matter" to vaccinate some children, since none could "be obtained in this part of the continent." Former pupil Cosmo G.

590 Brunhouse, "Ramsay," 204.
591 Barton papers, APS.
592 Leonard G. Wilson in *DSB*.
593 Abraham, *Lettsom*, especially 325–335.
594 Pettigrew, *Lettsom*, 3: 212–213.
595 Barton papers, APS. See Lettsom in our chapter XI, British Correspondents.
596 François Dezoteux & Louis Valentin, *Traité historique et practique de l'Inoculation* (Paris, 1800).
597 Barton papers, APS.

Stevenson of Baltimore wrote for "vaccine matter" on 5 March 1807. He hoped Barton would visit Baltimore once more and sent respects to Mrs. Barton.[598]

On 3 November 1811 came a reassuring letter from Baltimore physician Dr. John Crawford (1746–1813),[599] born in the north of Ireland, the second of four sons of a Protestant clergyman—one brother was physician at St. Thomas's Hospital in London. After Trinity College, John sailed as surgeon on two voyages with the East India Company to Bombay and Bengal. While filling a medical position at Barbados, he gave aid through a devastating hurricane and later served at Demerara. In 1796 he arrived in Baltimore, and during the summer of 1800 he introduced smallpox vaccine into Maryland, the same year Waterhouse employed it in Massachusetts. From his experiences in the tropics he had come to believe, as early as 1790, that a living *contagium* or *animalculae* could gain access to the human body, colonize, and give rise to disease. Like Barton, he came to believe that man was subjected to the same laws as the lower animals. He was convinced that although disease-causing organisms had not been identified, they would in time be recognized. When his colleagues spurned his concept of a *contagium*, he turned to the public press, the *Baltimore Observer*, in 1806 and 1807. He had written to Barton on 6 August 1807, "If you deem my speculations well founded will you have the goodness to impart them to Mr. [James Howell] Bartram. I confess I look for support to all naturalists."

In 1811 Crawford published a tract, *The Cause, Seat, and Cure of Diseases*,[600] the first of a series of lectures he gave that year, and about which he wrote to Barton on 3 November that year. After introducing Mr. John Clapper, a prospective student, not an avid reader, but "who has numerous excellent qualities," Crawford continued:

> *On Tuesday next I make my debut. On that day I commence a course of Lectures on the cause, seat and cure of diseases. A fearful undertaking! To attempt to put the sciences of medicine on the same footing with the other sciences, and to divert the mind from the path it has been pursuing for thousands of years is assuredly a gigantic enterprise.—If I succeed in even a small measure, I shall achieve much, altho' at a price, to me, ruinous—Who is it that has not been ruined by combating long established errors? I had hoped to have had the naturalists with me—Even Sir Joseph Banks acknowledges to me he is not prepared to admit the analogy which the other parts of the creation furnish when extended to man, and yet if man is an animal, in so far his nature must correspond with that of every other being which in this respect resembles him. But we are so much environed with self love, that we cannot degrade ourselves so as to put ourselves on a level with beings we consider as created for our use, and subject to our dominion. In this we may be deceived. Pride is the parent of error. I cordially adopt the opinion of Maupertius,*[601] *that our greatest success will consist in descending. If we can discover the general cause of destruction in the smallest insect, the same will apply to every part of the animal creation. This has hitherto been overlooked. If I can procure to it any share of its merited attention, I shall have accomplished my object.*

Crawford then turned to compliments for Barton, and advice:

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598 Barton papers, APS.

599 Wilson, "Baltimore"; Kelly *Cyclopedia*; R. N. Doetsch, *Bacteriol. Rev.* 18 (1964): 87–96.

600 *A Lecture, Introductory to a Course of Lectures on the Cause, Seat, and Cure of Diseases* (Baltimore, 1811).

601 Pierre Louis M. de Maupertius (1698–1759), French mathematician, physician, biologist, an early exponent of heredity. Bentley Glass in *DSB*.

> *You will have full classes this winter—You have all from us; and the numbers that have gone on from the southward is great. Notwithstanding your having drawn the cords of your accademical honours unusually tight, yet you are more than perhaps heretofore the objects of research. This is the way with everything human. As difficulties present, so is the excitement, and so is the estimation of achievement. Your weaving the necessity of publishing the Theses of inauguration is not of this description; if you were to establish an imprimatur, as a solemn act of your Regents, you would give an additional stimulus to genius and industry. If you leave it to the students, indolence or timidity, without such an excitement to overcome them would prevent anything valuable from appearing—But I am hazarding my opinion without the necessary information—I am unacquainted with the precise rules You have, in this case provided.—Adieu my Dear Sir! I am with the highest regard, Yours Sincerely, John Crawford, Baltimore, 3d Novr. 1811.*[602]

We found no record that Barton answered, but he surely appreciated that Crawford had been influenced by, or found assurance in, Barton's *Discourse* (1807), *Studies of Nature* (1808), and "Facts and speculations relative to the diseases that are common to the human kind, and other families of animals" (1809).[603] Both were early evolutionists, and both accepted vaccination.

The Philadelphia Medical Society

"A spark from friction"—*ex collisione scintilla*—was the motto of a medical anvil set in 1789 for the reinstituted Society, first launched by Dr. John Morgan in 1768.[604] Although a succession of short-lived societies had met, as in Charleston as early as 1765, it was the Philadelphia Medical Society that flourished, even though it was not part of the University nor of the Pennsylvania Hospital during Barton's professional years. To it most of the medical faculty of the University belonged, along with prominent physicians of the community and certain medical students. Three classes of membership obtained: Junior (until the award of the medical degree), Senior (practicing physicians), and honorary (restricted). Barton was an honorary member[605] until he had been granted his medical certificate and had established his practice in 1790.

Most important was the Society's role as a forum of opinion for controversial topics, e.g., the domestic or other origins of yellow fever and its treatment. Charles Caldwell in 1793 at the request of Rush, who held the same opinion, put forth on domestic origin of the disease. True to form, he had announced his topic in the local press so as to have a large audience, and the meeting became contentious.[606] Vaccination for smallpox and the theory of epidemics were subjects fit for friction among strong-minded characters. The first meeting in 1789 had been presided over by Benjamin Rush, who was elected president, a position he held until Barton's election in 1809. Curiously, Rush did not mention that event in his Commonplace book, nor does it appear in his collected letters for the year.

Meetings were customarily held weekly on Saturday evenings from six until ten o'clock. Papers were read, then discussed at the following meeting. Early meetings were held at Lyttle's frame schoolhouse on South Second Street below Spruce. Edward Cutbush, M.D., 1794,[607] relates how "each junior member carried his candle with him, and friend Lyttle's ink-pots in

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602 Barton papers, APS.

603 See Appendix I, Bibliography of Barton's Writings, no. 146.

604 Carson, *History*, 221–222.

605 Radbill, "Medical Society," 110.

606 Caldwell, *Autobiography*, 186–188.

607 Kelly, *Cyclopedia*.

the desk were the sockets for our candles, then and there were discussed, as we thought, learnedly of course, the merits of Cullenian and Brunonian doctrines."[608]

According to his dedication page, Barton read his *Collections* at a Society meeting on 21 February 1798 at Oeller's Hotel on Chestnut Street between Sixth and Seventh, then published it on or after 12 March. On Rush's urging, Nathaniel Chapman read his thesis on the *Canine State of Fever*.[609] It aimed at supporting Rush's hypothesis on the pathology of hydrophobia, an hypothesis rejected at the next meeting by James Mease,[610] who had studied under Rush and usually supported his preceptor's practices, especially his treatment of yellow fever. Chapman, who had intended to present a thesis on "The Sympathetic Connections of the Stomach with the rest of the Body," read that paper before a later meeting of the Society.[611] There were occasional social gatherings for the members. Among his papers Barton preserved an invitation: "Doc Barton's company is particularly requested at a dinner given by the Philad. Med. Society tomorrow half after 3 oclk, at the Indian Queen 4th St. S. D. Kemp, A Brockenbrough, J. Hocking Jr., comm. of arrangements. Feb 16 1804."[612] In characteristic manner, though he does not leave us a description of the occasion, if he accepted, Barton turned the invitation over to scribble a memo of his appointments, paper being a more precious commodity in those days: "Dr. Stevenson before the first of March; Rosanna; Dr. Stevenson & Vaccin. by XII° Cl.; Mr. Turpin on Tuesday." French artist Pierre Jean François Turpin was making drawings for his proposed "Elements of Zoology."

Sometime during the year 1808, with heated debate, there had been raised the question of the advisability of having the Society's president chosen from among the professors. Had Rush, so long president of this organization of local physicians, medical pupils, and professors, fearing that Barton would be elected, queried whether it might not be better to let other than a professor preside? Barton, Rush believed, was merely seeking an honored post to which he could not possibly give due attention. Barton was president of the Linnaean Society, which he had established in 1803, and was editing the *Philadelphia Medical and Physical Journal*, contributing articles and comment to it, besides his university position and his practice. On 5 December 1808 there came a note: "Dr. Barton is requested to meet the medical professors at the University, at half past four o'clock tomorrow afternoon." Nothing was settled. There was another meeting 23 December. Later that same day, Barton wrote to the medical faculty:

> *Gentlemen,*
>
> *I am sorry that I am prevented, by urgent circumstances, from attending the meeting of the Medical Faculty, this afternoon. This being the case, I think it my duty to address in this manner, my regret, that the business, to which the meeting principally relates, was ever brought before the Faculty. The more nearby I view it, the more I am convinced, that it is calculated to produce among the members of the Medical Society, sensations and invitations which will, unquestionably, be ultimately productive of much inconvenience, if not serious evil.—It is my wish, that the medical Faculty would, as this has been so repeatedly and so warmly wished by the Society, rescind their resolution. I am persuaded, that the Society will feel happy if this be done. This, indeed, I cannot doubt, mixing, as I am in the habit of doing, with the medical students in the University and especially with the members of the Society: among whom I comprehend several of the most respectable young practitioners in this city.—I do not*

608 Radbill, "Medical Society," 112.

609 *An Essay on the Canine State of Fever* (Philadelphia, 1801).

610 Dr. James Mease (1771–1846) M.D. University of Pennsylvania, 1792, a successful practitioner in the city (Butterfield, *Rush*, 652); Joseph Jackson in *DAB*; Austin, *Imprints*, nos. 1247–1250.

611 Radbill, "Medical Society," 112.

612 Barton papers, APS.

believe the Society will feel flattered,–I rather think they will feel hurt,–by the new resolution which the faculty propose sending to the Society: I mean the one spoken of last evening.

I am not without my fears, that My conduct, in this business, will be ascribed to improper motives: to motives of policy; to the desire of popularity. On this head, I must make myself easy, knowing as I well do, that for at least twelve years of my life, I have uniformly had the firmness to give my opinion in the Medical Board, on the most difficult and delicate points that have ever been agitated among us; and believing that those who know me well, will, always view me as a man of independent sentiments.

With greatest respect for the Medical Faculty, both as a body, and individually,–I dissented from the whole of their proceedings when this business was first brought before the board, at which I beg it to be recollected that I was not present: neither had I an opportunity of seeing, or of reading any part of the paper transmitted by the Faculty to the Society.

Permit me to add, Gentlemen, that I do not consider your resolution as at all binding upon me: and, of course, that I shall not resign my seat as the President of 'the Linnean Society,' unless requested by the Society to do so.

I am, Gentlemen, with great respect, Your colleague & Friend, &C.

B. S. Barton

P. not having kept a copy of this paper, I have to request that it may either be kept among the minutes of the society, or returned to me. BSB[613]

Had Rush argued that being president of the Linnaean Society should disqualify Barton? Members of the Medical Society were, however, persuaded by Barton's letter, and Barton recorded a memo for himself: "Feb. 4, 1809. I understand that the late election of President at the Medical Society [at the January meeting] the votes were 52 for me, & 6 for Dr. B. Rush.– And this night for orator the votes for me were 50; for Dr. Rush, 16–10 others were scattered between 3 other persons."[614] He acknowledged his election that same day in an effusive letter to Dr. Samuel Jackson, Acting Chairman of the Society.[615]

Despite the growing friction between Rush and Barton, they joined doctors Dorsey, Physick, Wistar, and Woodhouse in advocating that graduation in medicine from a "respectable university" be required for earning a commission in the navy, but they differed in whether males should attend the delivery of infants. When Barton was one of those who advocated two years of residency rather than three at the medical school, Rush advised his students to spend their time on courses he considered more important than Barton's materia medica and botany, conduct that Barton felt was "most hostile." The intensity of feeling between Barton and Rush peaked about 1808 and is displayed in letters reproduced in our Chapter VII, Confrontation. The letters bring to the surface many old wounds and show the depth of disharmony between them.

When James Woodhouse died on 4 June 1809 at the age of thirty-nine, having been attended by Rush, Barton was chosen to deliver the eulogy, probably before the medical society. That same week, Thomas Paine died in New York. Rush had strong feelings about the views shared by Paine and Woodhouse, and by Barton. He wrote that Paine's *Age of Reason* (Paris, 1794) "probably prevented more persons from the Christian faith than any book that was ever written for the same purpose owing to [its] popular perspicuous and witty style." In Barton's eulogy for Woodhouse, which was never published and was probably destroyed, he made references to unnamed persons, and sensitive Rush was angry. Barton had

613 Barton papers, APS.

614 Barton papers, APS; found with Bot. notes, no. 1.

615 Barton papers, APS. Found among Botanical papers.

acquired access to Woodhouse's papers with their obviously unfavorable comments on Philadelphia's once-popular physician. On 24 September 1812, Zaccheus Collins wrote Muhlenberg that Barton intended *Woodhousia* as a name for a new grass in his *Flora Virginica*.[616] Publication of the *Flora* did not proceed that far.

Barton occupied the presidency of the Medical Society until his death. His nephew, William P. C. Barton, read his obituary at the Society's meeting 16 February 1816, and included a version in his biographical account in his edition of *Elements of Botany* (1836).[617]

616 Muhlenberg Correspondence, APS.

617 W. P. C. Barton, "Barton."

Chapter VI

Progress

"I certainly do not repose implicit confidence in the half of what is said concerning the powers of medicine."
—Barton in Preface to *Collections*

A European Medical Degree

That Barton had no more than a medical certificate from his university was galling to him, if not of concern to the administration. He set about to obtain a diploma in a way not unfamiliar at that time, and even for many years after—on the basis of reputation, publications, and a fee.[618] He hoped some one of his correspondents, perhaps Fabricius, could be persuaded to use his influence to obtain a medical diploma. As a point of honor, Barton no doubt could not make his request directly. It would be more politic to have someone just outside his field suggest him for the honor, someone who had benefitted from his correspondence and contributions and who was familiar with his researches. Such a man, virtually unnoticed today, was Christoph Daniel Ebeling (1741–1817), Hanovarian professor, born in the village of Garmissen near Heldescheim. He had intended to enter the ministry, when he enrolled at the University of Göttingen, but after a spell of teaching history and Greek he became librarian for eighteen years at the Staatsbibliothek in Hamburg, all the while collecting 4,000 books on America and information from American correspondents on natural resources, history, statistics on the Atlantic states, and nearly 10,000 maps. The first volume of his projected thirteen, seven completed before his death, his *Erdbeschreibung*[619] was on Massachusetts (1793), the last on Virginia (1816), and the second last on Pennsylvania. A Boston merchant, Israel Thorndike, influenced by his son's visit with Ebeling only a month before his death, purchased the treasure of Americana for Harvard in 1818.

It may have been Fabricius who made the original contact between Barton and Ebeling in 1794 or earlier, for Ebeling mentions Barton in a letter to Reverend William Bentley of Salem, when speaking of "Mr. [Matthew] Carey, Mr. [John] Ormrod and the very kind Dr. Smith Barton with [books] from Philadelphia and the southern States."[620] Ebeling had received Jedediah Morse's *American Universal Geography* "from a Friend in Philadelphia where I have a very good correspondent." Acknowledged, too, were Dr. David Ramsay of Charleston and Rev. Jeremy Belknap of Boston, for whom he had "no words to praise their kindness." Barton's New York colleague, the "worthy Dr. Mitchill," and Rev. Muhlenberg were also Ebeling's correspondents. By September 1795, however, Ebeling lamented to Fabricius that "from America I have still many letters but am very unfortunate with Philadelphians." Whatever his neglect may have been, Barton wrote, keeping a rough but "exact copy," to Ebeling at Hamburg 11 May 1796:

> *I have not heard from you, for some time. However, from what the Reverend Dr. Muhlenberg has told me, I have hopes of hearing from you*

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618 Medical degrees were purchased by Amos Eaton and John Riddell, later botanists.

619 *Erdbeschreibung und Geschichte von Amerika* (Hamburg, 1793–1816, 7 vols. published).

620 W. C. Lane, "Letters of...Ebeling," *Amer. Antiq. Soc. Proc.* n.s. 35 (1925): 272–451, the quotation on p. 284.

and Mr. Zimmerman, very soon. My object in writing to you, at present, is to request that you would endeavour to procure for me, from some one of the German or other universities, the degree of Medicinae Doctor. Perhaps, Professors Zimmermann and Fabricius can assist in this business. Would it not be possible to procure this honour from Göttingen or from Leyden? Have you a medical University at Hamburgh, or is there one at Brunswick or at Kiel?—Several years since I have received the degree of Medicinae Doctor from an University which, I confess, I do not much respect. I am, therefore, anxious to obtain the same degree from one which I should much more respect. As to the expenses arising out of the degree, they shall be paid immediately upon my knowing the amount. Should you succeed in obliging me, you have only to draw upon me, for the sum, through any person you please, in this city and the draft shall be honored. Hoping that you will attend to this business, as soon as possible, and in the most delicate manner, I remain, with very great respect, dear Sir,...[621]

Ebeling promptly contacted Fabricius at Kiel and the degree of Doctor of Medicine was awarded to Barton by Christian-Albrechts University at Kiel; dated 31 August 1796, it bears no signature. It survives today at the Historical Society in Philadelphia. The official record from the Protokollbuch (p. 172) of the Medical Faculty reads:

Unterm 31 Aug. ward Benj. Smith Barton Prof Histor. natur. et Botan. zu Philadelphia wegen seiner ausgezeichneten Verdienste in naturgeschichtl. und phys. Fache nach seinem durch H. Prof. Ebeling in Hamb. geausserten Wunsche der Gradus Doct. medic. einstimmig conferiert.

In May, David Rittenhouse had reported to Barton on seeing a flamingo in Philadelphia. In June he became ill: Barton witnessed the signing of his will, and on 26 June 1796 he died. Rush delivered a eulogy at First Presbyterian Church on High Street, the ceremony attended by Washington, Jefferson, senators and representatives, many of the clergy, and professors from the university and The College of Physicians. The "excellent pocket watch made by LeRoy of Paris" for Matthias Rittenhouse, which had been given to Rittenhouse, who used it to check against his own instruments for astronomical observations, was willed to Barton.[622] On Barton's death, the watch passed to his son, Pennant.

Mary, Beloved of Family and Pupils

Election to the professorship of Materia Medica enabled Barton to seek the hand of the youngest daughter, Mary, born 17 March 1771, to the well-to-do sugar merchant, Edward Penington, and they were married in 1797. Barton had met Mary at an evening gala. The Peningtons[623] were Quakers from Bucks County, England, early settlers in Pennsylvania. Isaac Penington, her grandfather, was the son of an Edward Penington, half brother of Mrs. Penn, a surveyor general of the Province of Pennsylvania, and secretary to William Penn, his father-in-law. Isaac had a large library and had been one of the early importers of foreign titles.[624] There were two cousins of Mary, probably the sons of either Isaac or Benjamin. One John Penington (d. 1867) became a leading rare book dealer, and Edward, who continued to live in the old mansion, was also a book dealer and a stationer. He died 29 December 1863.

621 HSP.

622 W. Barton, *Rittenhouse*, 132.

623 Jordan, *Colonial Families*, 1: 578.

624 *The Press* (Philadelphia) 19 March 1867. Gardner collection E. Penington, Box 26, HSP.

Isaac's son Edward, Mary's father, was a successful merchant and land-holder, one of the founders of the Philadelphia Library Company, and a member of the American Philosophical Society since 1768. In 1754 he married Sarah Shoemaker, daughter of Samuel Jennings, Quaker governor of New Jersey. She was three years his junior, and they had ten children. Edward had opposed armed conflict during the Revolution and so was exiled with his family to Winchester, Virginia, until 1778. Active in civic affairs after his return to the city, one of his duties was as manager to Pennsylvania Hospital. He built an imposing mansion in suburban Philadelphia at the corner of Race and Crown streets,[625] and there Mary was born and spent her early years. Her brothers Isaac and Edward inherited their father's successful business refining sugar, the establishment at 155 and 159 Race Street between 4th and 5th.[626]

Little survives in the record of the feelings and attitudes of the women of the Rittenhouse, Penington, or Barton families. Without doubt they were busy women, supervising the running of the household and servants. Several were burdened with large families to nurse and nurture. As leading ladies of Lancaster and Philadelphia, they probably took in as servants new immigrants, who, as indentured persons serving out their time, were becoming accustomed to conditions in the new land.

We know of no letters written by Mary Penington Barton before Barton's death. He wrote her affectionately while making professional requests on his trips away from home. He mentioned her only occasionally in letters to his brothers or other correspondents, although they almost always sent their affectionate regards to her. She came from a family that had been administrators and financially successful in the settling of Pennsylvania, and so she was knowledgeable of the early days and the struggles during the War of Independence. She married into a family with noteworthy forbears, the Reverend Thomas Barton's family and David Rittenhouse's. Her father may have encouraged her union with these distinguished families and with an ambitious young intellectual with a promising professional future. From a family of Quakers, she probably shared the feeling of disapprobation of the treatment of the Loyalist, Rev. Thomas Barton, and so of his children. Did she know of Barton's unfortunate conduct while a struggling student at Edinburgh before she married him? We shall probably never know, but we hope she mastered her disappointment and cherished her husband through his bouts with ill health, not just dutifully, but with genuine affection and understanding.

Her Quaker upbringing and pride in belonging to leading families, and being the wife of a prominent physician and professor, an attractive and handsome man, aided her in taking in stride the problems of her husband. "Science is a jealous mistress," and bibliophiles are compulsive collectors. With a loving, but often choleric and overburdened husband, she had much to endure, but we read only appreciation of her. Warm regards came from those who had been visitors to, or grateful pupils of, the distinguished naturalist. Twenty-three former pupils whose letters survive sent "respects" or compliments to "Mrs. Barton" or "to your good lady." Grafton Duvall of Frederick County, Maryland, in 1812 sent regards to her "whose affectionate deportment will ever be gratefully acknowledged by me." Walter Channing requested "I will thank you to express my respectful sentiment of regard for Mrs. Barton & your children." Darlington referred to her as "a most estimable lady, ever received me and treated me with motherly kindness."[627] The portrait (Figure 7) of this modest lady passed to

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625 An account of demolishing the mansion for the building of a schoolhouse appeared in *The Press*, Tues. 29 Dec. 1863 (copy at HSP, Box 26 Penington Papers). A silhouette of Mary's brother, Edward, and one of Isaac Smith, are laid in Thomas Pennant Barton's copy of Mary Penington, *A Brief Account of my Exercises from my Childhood...* (Philadelphia, 1848), copy in BPL.

626 Shoemaker, *Genealogy*, 63; Penington Family papers, HSP; in part letter from Mrs. J. R. Delafield, 16 July 1936, Barton papers, APS.

627 Darlington, "Reminiscenes," Ms., Pennsylvania State College, Westchester. "A gallery of admirers" has been composed by us from letters of pupils and other correspondents: Robert B. Cabell, 12 April 1806; Walter Channing, Boston, May 1810; Grafton Duvall, Frederick Co., Maryland, 10 August 1812; John Floyd, Kentucky?; Joseph Glover, Charlestown, 1808; John Grimes, Savannah, 1814; Daniel Hughes, Jr., Hagerstown,

Thomas Pennant Barton and hung in the Livingston-Delafield dining room in the home at Montgomery Place on the Hudson.

Mary assumed management of affairs while her husband was away on journeys. It was probably on his trip as far south as Pilot Mountain and Monticello in 1805 that he addressed his letter to Mrs. Mary Barton, No. 154 Arch St., Philadelphia:

> *Dear Molly,*
>
> *I arrived here on Monday-evening,* [the 24th]. *I am well, & now quite recovered from the fatigues of my journey. I found all my Brother's* [Richard Peters Barton's] *family well, and anxiously inquiring after your happiness.*
>
> *I beg you to write to me, upon the receipt of this letter. Directing to me in* [address and another line cut out] *dont omit this, if anything material occurs.*
>
> *I think I shall be in Philadelphia in less than 4 weeks from the time I left you. I shall be home much sooner if the State of the city should seem to point out that it may be useful to <u>me</u> to return earlier. But do write to me, & write immediately upon receiving this.*
>
> *Remember me affectionately to Sally Nisbitt.*[628] *Kiss the little ones, and be assured of my love.—Yours, &c. B.S.B.*
>
> *Compliments to all the gentlemen.—Please to pay the postage of your letter: in this case it will come more safe.*[629]

On other occasions Barton called on her to supervise the apprentices, while he was in the field, and to see that other physicians were contacted for his patients, if necessary. Mary's mother died sometime in 1797, and shortly thereafter she received the following legacy:

> *We hereby acknowledge to have received of Edward Penington one of the Executors of Sarah Penington deceased, all the Plate & Household furniture bequeathed by her to her daughter Mary Penington now Mary Barton amounting to two hundred & forty eight pounds nine shillings and one penny as appraised by David Evans.*
>
> *(Signed) Benjamin Smith Barton*
> *Mary Barton*[630]

Edward was the brother closest to Mary and Benjamin, especially in regard to financial investments and dealings. Each lent the other money for speculation or negotiated loans. Edward's receipt for a loan to Barton in 1801 is mentioned by Corrêa da Serra in a letter to Jefferson in February 1816, and Barton received a request from Edward dated 6 February 1812 for a sizable sum. Uprooted as youngsters with their family to Virginia for several uncertain years, Edward and Mary may have felt a particular sympathy and kinship with another who had suffered due to the turmoil of the Revolution. Edward remained loyal to his

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Maryland, 1810; Robert Hunt, Princeton, New Jersey, 1798; William Stephen Jacobs, St. Croix, 1811; Boyd McNarry, Nashville, 1814; James Merry, Halifax, Virginia, 1807; William Thomas Morris, Sunberry, 1806, Reading, 1807; Thomas Picton, Westfield, East Jersey, 1805; John H. Pope, Washington, ca. 1808; Thomas Grimball Prioleau, Charleston, 1808; Felix Robertson, Nashville, 1810; Jarvis Roebuck, St. Croix, 1804; Fabriano Ruiz, South Carolina, 1809; George Cheyne Shattuck, Boston, 1810; John Shelby, Bath, Virginia, 1812; Edward Darrell Smith, Charleston, 1801; Cosmo Gordon Stevenson, Baltimore, 1807; John Richardson Young, Hagerstown, Maryland, 1804.

628 Possibly the visiting daughter of Charles Nesbet (or Nisbet) 1736–1804, Presbyterian minister and first president of Dickinson College. *DAB*; Butterfield, *Rush*, passim, and letters.

629 Barton papers, APS.

630 Penington papers, HSP.

brother-in-law through his life. He was elected to membership in the American Philosophical Society on 16 January 1808, but there is no record that he read a paper before that organization. He was, however, elected a counselor for a year in 1813. He was of inestimable help to Mary after Barton's death in sorting and arranging the delivery of those manuscripts Barton willed to the Society and in preparing books for their sales. He helped preserve other manuscripts and drawings, but he may also have taken part in the weeding out of some of the critical materials that would have given us a more complete picture of Barton's character and dealings—would have filled in gaps that have necessarily remained. Mary probably left the trunk of *reliquiae* in Edward's care, the trunk that after his death reached Thomas Pennant Barton in New York after Pennant's return from Europe, and which eventually came to the American Philosophical Society from the Livingston home on the Hudson through the heirs, the J. R. Delafields.

Mary's youngest brother, John Penington, just two years older than she, may not have approved of her marriage, had he lived. He was born in Philadelphia in 1768 and presumably attended Friends' School. He won his M.A. at the College of Philadelphia, his thesis *An Inaugural Dissertation on the Phoenomena, Causes and Effects of Fermentation* (Philadelphia, 1790). The same year at twenty-two years of age he published a 200-page treatise, *Chemical and Economical Essays designed to illustrate the Connection between the Theory and Practice of Chemistry...* (Philadelphia, 1790), printed by John Adams.[631] His sentiment expressed in the quotation on his title page reads: "It is a pity so few chemists are dyers, and so few Dyers are chemists." In 1789 Penington had helped organize the first chemical society in America.

Probably Rush and other physicians encouraged John's taking his M.D. degree at Edinburgh. There he heard of Barton's unfortunate handling of the money from the Medical Society's treasury and the threat to advertise the misdeed "per totem orbem Terrarum" since he had not made restitution, and Penington wrote concerning the affair to Rush. Back in Philadelphia in 1793 he entered practice, preferring Rush's methods and adopting his excessive bloodletting in the treatment of yellow fever. In that year of the dreadful epidemic he contracted it himself. On 20 September Rush wrote to his wife, who had left town to escape the malady, "Poor Dr. Penington is no more. His death was occasioned by his going out too soon after his recovery." On 3 October Rush wrote to R. B. Rodgers, one of the founders of the College of Physicians, and then at Columbia, "I must here pay a tribute of respect to the memory of my much beloved friend Dr. Penington, who adopted the new remedies [Rush's adaptation of Brown's] as soon as they were mentioned to him. His expanded mind was not cast in a common mold. It vibrated in unison with truth the moment it came in contact with it."[632]

A Professor of Materia Medica

The opportunity for advancement had presented itself to Barton in 1795. Dr. Samuel Powel Griffitts (1759–1826), who had been the principal founder of the Philadelphia Dispensary and a close personal friend of Rush, decided to retire as Professor of Materia Medica in 1796. Writing to Thomas Pennant on 26 March 1794, Barton had confided that unfortunately he could not, although the country was "fast growing into manhood," expect financial support for his zoological work: "I am not entirely insensible to the love of reputation; but, like hundreds of others, I must not, in my literary pursuits, lose sight of what is more substantive than mere reputation—that which brings me the necessaries, and the comforts of life." Here was an opportunity even more closely allied to his interests than was

631 Probably one of the four sons of James Adams from Ireland. He had been employed by Franklin (Thomas, *Printing*, 389, 527).

632 Butterfield, *Rush*, 672, 698.

the field of chemistry. He had consulted his uncle, who wrote in his behalf to the Honourable Dr. Thomas McKean, Chief Justice of Pennsylvania:

> *Philadelphia Dec. 26th 1795*
>
> *Dear Sir: I am informed that Dr. Griffiths intends to resign his professorship in the University sometime this Winter. On this occasion I beg leave to recommend to Your favourable notice my Nephew Dr. Barton. He certainly has abilities sufficient to enable him to be useful in any branch of Medicine, and ambitious enough to induce him to make the Greatest exertions; besides, the Materia Medica seems so nearly connected with Botany & Natural History, his favourite studies, that I flatter myself he will be successful in his intended application to the Honble. Board of Trustees, but I am certain this will much depend on Your Interest. I am, Dear Sir, with sincerest affection and esteem, Your most obedt. Servant David Rittenhouse*[633]

Rush, Dr. Thomas Chalkley James (Professor of Midwifery), and Woodhouse were the three who voted against him, but much to Rush's dismay, Barton received the appointment. Rush wrote to Coxe in London in 1796:

> *Dr. Barton has succeeded Dr. Griffits as Professor of materia medica in our University. Dr. James was opposed to him. He lost the appointment by three votes. Dr. Shippen was Barton's <u>open</u> friend, and the other professors (Woodhouse and myself excepted) did not oppose him—hence his success! I consider him as a recruit to the enemies of the new system of medicine, and that he will be supported in proportion as he barks at me.*[634]

Malevolently, 14 June, Coxe responded, "Poor Barton has at length got a resting place. I fear it will be as <u>lucrative</u> (which is all he wants) as his former appointment of Botany &c."[635] For Barton, the "resting place" meant that now he was a bona fide member of the Medical School. The impressive number of successful physicians who admitted their debt to Barton's attentions to them contradicts Coxe's claim of his neglecting at least his more promising pupils. The fact that Barton welcomed so many to the use of his library was overlooked by Coxe. The new system of medicine was that of Dr. John Brown, which Rush adapted to his own views. His old antipathy to Shippen dated from Shippen's lack of support for Rush's attempt to better the treatment of the wounded in the Army and to Shippen's not forcing Barton to exhibit his diploma. Barton made a note of Shippen's part in his success:

> *Dr. Shippen, with one of the other professors, stepped forward in my behalf and such was the zeal and the warmth of friendship, and the activity of his exertions, that I think it highly probably that the success of my election depended, in no small degree, upon him. Nor did my preceptor's good offices in respect to the chair of materia medica terminate here.*[636]

There can be no doubt that besides the support of Rittenhouse, McKean, and Shippen, he also had the good offices of William Smith, now provost of the university, and Rev. Andrews, now vice-provost.

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633 Hindle, *Rittenhouse*, 304, fn. 27.
634 Butterfield, *Rush*, 775.
635 Rush papers, 27: 39, HSP.
636 Barton papers, APS.

Barton assumed the duties of Professor of Materia Medica in 1797, still retaining his position as Professor of Botany and Natural History. Each year he took pains to have tickets of admission professionally appropriate, and so he would send a sketch to the printer. Then he suggested corrections to the proof as for:

> *April 25, 1800*
> *University of Pennsylvania*
> *A Course of Lectures*
> *on Botany*
> *by Benjamin Smith Barton, M.D.*
> *Professor of Materia Medica,*
> *Natural History and Botany*
> *For* [pupils' signature and Barton's]
> *Printed by Way and Groff, 48, North Third Street.*

With the return of the proof he requested:

> *Please to let me have some of the cards, done in the best manner you can, very soon. The word on after lectures dont look well, & had better be put under the word lectures: perhaps as smaller letters. The words M.D. may be put a very little closer, & after the dot which follows D. put a comma, thus M.D.,*[637]

A variant of this ticket is illustrated by Figure 22.

Barton, from the heart, stressed the wider values of medical botany in a fragment (or is it the whole?) of his undated address to the medical students upon their graduation one year:

> *The education which you have received in this University will place you, in many respects, in a station of great importance among your countrymen. Independently of the practical advantages immediately connected with your profession, you carry with you, from this school a knowledge of the true principals of agriculture, which you have derived from the lectures of the professor of chemistry, natural history, materia medica, & botany. You may, thus, rapidly extend among that most useful & virtuous portion of our citizens, the cultivation of the cattle, the outlines of the noble science of agriculture, so honorable, so salutary, so necessary, to the human species.*
>
> *Your station is important, & perhaps still more important, in another point of view. The studies of the physician, and especially of the naturalist are peculiarly favourable to the existence & the spread of a short solemn species of Religion which arises out of the contemplation of the works of nature. It is in your power; it is your duty, to extend among your countrymen a knowledge of the works of God: so far at least, as may be conducive, & such knowledge cannot fail to be conducive, to the extension of their views of the wisdom, the power, and the benevolence of the Creator. Duo namque sunt quae in caputi mens Dei decunt, Creatio et Scriptum. These are the words of Augustine.*[638]

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637 Barton papers, APS.

638 "Address to medical graduates," Barton papers, APS.

His dedication of the second volume of his *Philadelphia Medical and Physical Journal* (1805) to his medical pupils expressed his esteem and hopes for their future contributions to the progress of medicine and science. It also stressed the importance and necessity of their hoped-for support for such journals.

Among the professors at the university, Dr. Adam Kuhn, who had preceded Dr. Griffitts, appears to have had the greatest influence on Barton's medical philosophy and continued to act as consultant.[639]

Nathaniel Chapman, "Dean of the Faculty," extracted information for Barton from Minutes of the medical school in an undated memo:

> *Every candidate shall have attended two complete courses of the following lectures in this University—Anatomy, Inst*[itutes] *& Pract. of Physick & Clinical Medicine, Mat. Medica, Chemistry, Surgery, Midwifery.*
>
> *Excepting only such gentlemen as have attended two courses of lectures on the same subjects, in some respectable univ. or school, and for such, it shall only be necessary to attend one entire course in this university.*[640]

Materia medica is now a division of pharmacology: the study of the source, composition, characteristics, and preparation of drugs, which may be of inorganic sources (compounds of iron, mercury, etc.) or organic sources (animal tissues or plant products). For Barton, as for his mentor Cullen, the content of his materia medica course included the identity of helpful plants, their use in the treatment of the ills of his patients, the nature of poisons, and the preparation and dispensing of concoctions, mostly from roots. Encouragement of his pupils to investigate new plants was always a part of his teaching.

There was no adequate text upon which American physicians and pupils could rely. Dr. Griffitts in 1788 had been placed on a committee by the College of Physicians to proceed with one of his desires, a national pharmacopoeia, but had not pursued the task,[641] and so he may have encouraged Barton to do just that. In his lectures Barton had been using notes he had collected on Indian plant uses; had borrowed liberally from the eighty-nine page manuscript of William Bartram's "Pharmocopoeia" and material in letters from Heckewelder; had added his own observations and experiments with native plants, and those of his pupils. Into these he threaded material from Cullen's *Treatise on Materia Medica* (Edinburgh, 1789, 2 vols.). These formed the basis of what Barton hoped would develop into a major work. His *Collections* [Part 1] was meant only for a beginning.[642]

Collections was read as an anniversary lecture before the Philadelphia Medical Society on 21 February 1798 at their request to demonstrate, he said, his attachment to the Society in which he first imbibed his love of the different sciences that constitute the great fabric of medicine. He then had it published, dating the preface 12 March, and presented a copy to the American Philosophical Society the 19th. His dedication was to James Edward Smith to convince him "that there are some lovers and cultivators of botany in the United States," and that though "nomenclature" is still imperfect, and "we are still less well acquainted with the properties of our productions...the pain is daily diminishing." In the preface, Barton had confided:

> *I do not expect to acquire any reputation by this publication. Perhaps in making the assertion, I shall not be doubted, when I confess that in every thing which I have hitherto published, I have had reputation in view. If I*

639 Kuhn's 44 lectures are at NLM, leaving a record of the influence on the medical school of the University of Edinburgh, e.g., "Dr. Whytt of Edinburgh has wrote an excellent treatise on women's diseases" (f. 89).

640 Barton papers, APS.

641 Carson, *History*, 103.

642 Manuscripts in Library, University of Wisconsin; Jeffries, "Materia Medica," 17-71.

have not acquired it, I have borne the disappointment with tranquil indifference.

The readers of these Collections...will form different opinions about my medical faith...

I certainly do not repose implicit confidence in the half of what is said concerning the powers of medicine. Accordingly I have not given a place in these pages to many of our vegetables which have been praised as specifics for the cure of diseases; in particular, as specifics against the bites of venomous serpents. But, on the other hand, it will be asked, whether I mean that all the different vegetables which I have mentioned, should have a place in the materia medica of physicians? I answer, no. But how are we to know what plants are most proper for the purpose of medicine, until we shall have examined the properties of a great body of vegetables?...I wish to turn the attention of our physicians to an investigation of the properties of their native productions. When it is considered how little has hitherto been done in this way, every attempt (mine is a humble one) should be candidly received. I do not mean that its faults should not be pointed out...

Whatever may be the reception of this essay by the public,...I shall pursue my inquiries...because I have the experience of several years to teach me, that the cultivation of science is the extension of my happiness.

In the introduction Barton told his audience that he had, "at one time, contemplated a comparative view of the different theories which have prevailed in medicine, in the present century." Besides finding the subject too extensive for this lecture, he "should have been obliged to speak with a freedom, which might not have given pleasure to every one of us." In his audience were, if not Rush, then some of Rush's disciples, and Barton in this way reaffirmed where he stood in the turmoil over Rush's modes of treatment during the Yellow fever epidemic. "Men are often attached to theories, as parents are attached to their children."

Barton had acquired a copy of Schoepf's *Materia Medica Americana* (Erlangen, 1787),[643] a 170-page handbook, in Latin, designed for physicians, stating pharmaceutical properties and uses of American plants that might be substituted for European sorts in whatever handbook the physician had brought to America. The format is botanical, following the Linnaean system, rather than medical. Barton commented that Schoepf "ascribes active powers to plants which are nearly inert, and appears to me, in some measure, governed by the old notion of Signatures: one of the tyrants of the ancient schools."[644] Schoepf did not exhibit "scepticism which ought to be attached to physicians." His "credulous disposition" accepted without proof information he had acquired from unreliable sources. Still, Barton admonished his audience to "tread lightly" on the work of "a man of learning." Johann David Schoepf (1752-1800),[645] surgeon with the mercenary Bavarian troops, Hessian auxiliaries, during the Revolutionary War, was a pupil of Schreber of Erlangen, a friend of Henry Muhlenberg.[646] After the close of the Revolution, Schoepf travelled through the Atlantic seaboard states during 1783-1784, botanizing and observing. He visited Bartrams' Garden and met members of the American Philosophical Society while in Philadelphia. He sailed for Charleston and in March 1784 for the Bahamas and home. Back in Bayreuth he served as court and military surgeon. Schoepf

643 Barton's copy is now missing.

644 *Collections*, 3.

645 Goode, *Memorial*, 396-397; Garrison, *Hist. Med.*, 26, 376; Morrison in Schoepf, *Travels* 1: v-viii; P. C. Standley, *Rhodora* 21 (1919): 69-70; Hindle, *Pursuit*, 307, et passim.

646 J. C. D. von Schreber (1739-1810), Muhlenberg's European contact, sent Schoepf's collections to Lancaster (Mears, *Indices*, 191; Mears, "Muhlenberg," 155 and 171; Darlington, *Memorials*, 576).

published a two-volume account of his travels in 1788—Barton owned a copy.[647] As with that of the Italian naturalist Luigi Castiglioni, Schoepf's narrative, now available in translation,[648] is highly readable and of historical importance for his report on social and political conditions in the young republic. Both contain abundant notes on American fauna and flora. Schoepf was accompanied by Franz Joseph Maerter and associates visiting from Vienna, collecting on behalf of Schönbrunn Gardens and whose plant records were noticed by Pursh. Schoepf wrote a pioneer treatise on turtles[649] and another on fishes. His florula of New York and vicinity, describing some 790 flowering plants, rests unpublished in Munich.[650] Schoepf described rocks and minerals more fully than Maclure, and mentioned such geologic features as the Fall Line and the Schooley Peneplain, not mentioned by Maclure.[651] Barton saw Schoepf as one of his European rivals preempting publication of American natural history novelties. If Schoepf's writings on botany, zoology, and geology had been available in this country in translation, or fully published, his impact on American science would have been impressive.

Barton's own *Collections*, he admitted, is so extremely unfinished. The text is chatty: he first considers "Materia Alimentaria," and in it two little-known plants—*Sabal*, with its palm fruits from Mobile, Alabama, described for him by William Bartram; and "Smilax China,[652]" for which he gives directions for making a delicious jelly and its Indian uses. He proceeds with "Materia Medica" under the headings: Stringents, Tonics, Stimulants, Errhines, Sialogoga or Salivating medicines, Emetics, Cathartics, Diuretics, and Anthelmintics. Aware as he was of the general lack of knowledge of plants of the New World and their possible uses, Barton hoped to fill the need for a text for pupils and local physicians alike. To undertake a complete pharmacopoeia, as Dr. Griffitts had hoped, would, he realized, be a lifelong task. And so he began with what Dr. Lemuel Kollock of Georgia referred to as a "short but interesting publication," the first part of Barton's *Collections*. Kollock wrote:

> *And what augments our satisfaction is, that this is the undertaking of a native American. Too long have we been indebted to foreigners for the best information concerning the plants of the western continent; and even at this moment the German student may obtain more exact accounts of the trees and shrubs of North America from the untranslated works of Wangenheim and Du Roi, than our own youth can find in any publication, with which we are acquainted in the English language...Professor Barton makes an enthusiastic and eloquent eulogium upon the application of Botany to the improvement of the Materia Medica. May it stimulate and inspire the youth of our country to undertakings which shall leave no field of natural science unexplored.*
>
> *We here take leave, with regret, of this short but interesting publication...we ardently desire that this Essay may prove a nucleus to which accretions of similar information may constantly take place: and a germ, which, under the industrious and learned care of Professor Barton, may ere*

647 *Reise durch einige der mittlern und südlichen Vereinigen Nordamerikanischen Staaten* (Erlangen, 1788, 2 vols.); Ewan, "Barton's library"; Sabin, *Dictionary* 77757; Schoepf, *Travels*.

648 Schoepf, *Travels*.

649 *Historia testudinum* (Erlangen, 1792).

650 Adolph Toepffer, *Torreya* 24 (1924): 57–58.

651 Edmund M. Spieker translated Schoepf's *Beyträge zur mineralogischen Kenntniss...* as *Geology of Eastern North America...* (New York, 1972), and provided a useful map of his travels; Greene, *American Science*, 223, 442–443.

652 [Several botanists used this name, among them Linnaeus. Walter's China Root or *Smilax china* was later referred to Coral Greenbriar, *Smilax walteri* by Pursh. Fl. am. sept. i. 249. 1814. IPNI, ITIS.]

> *long, expand into fragrance and beauty, and ripen into imperishable and delicious fruit.*[653]

Samuel Miller concluded, "Under this modest title, Dr. Barton has presented a body of information, and discovered an accuracy and extent of learning, which might, without impropriety, have made higher claims."[654] With what satisfaction must Barton have read this.

As a respite from his medical practice, on Tuesday, 2 October 1798, Barton left Philadelphia with William Maclure (1763–1840), Dr. J. B. Scandella, a visiting Italian naturalist, and Thomas Peters Smith (1777–1802). They travelled by way of Lancaster to Harrisburg, which was reached on the eleventh, then to Northumberland to visit Priestley, and home by way of Cornwall Furnace, which they reached on 13 October. Mineralogy dominated their interests, but Barton, at least, collected plant specimens.[655]

Physician Louis Valentin (1758–1829) wrote from Paris on 1 November 1798 that Deveze and Palisot de Beauvois had arrived safely and sent their "best compliments."[656] Evidence that the United States had a limited reading public for botany and plant uses was borne out on the visit of Samuel Stearns to Philadelphia, a houseguest of Rush. His mission was to gain support for his *The American Herbal or Materia medica...* (Walpole, N.H., 1801). There were no subscribers in Philadelphia, nor even in Pennsylvania.

This year, 1798, Barton joined the staff of Pennsylvania Hospital. On the second of December the American Philosophical Society's secretary was requested to inquire of the busy doctor "when he will positively be in readiness to deliver the Annual oration," to which on the 27th he replied, "1 March." Meanwhile, on 21 December he read a paper on the pernicious effects on horses who ate *Equisetum hyemale*. The paper was referred to a committee and approved for publication on 19 January, at the same meeting that the printer was to be directed to close volume four of the *Transactions* with papers already in hand,[657] and so this paper evidently was not published, even separately.

Barton continued with *Collections*, slightly revising the first volume and adding a second, which appeared in 1801. He reissued them in 1804 and 1810, but proceeded no further. His lecture notes do not survive intact, possibly because most of them became part of other publications, principally his new edition of *Cullen's Treatise on Materia Medica* (1812), an auxiliary to his own text, but with his notes added (Figure 25). There is, however, a manuscript on "Materia Medica," now in the University of Wisconsin library not seen by us.

Barton perpetuated the Latin, which for today's pharmacy students amounts to a foreign language, in twenty-five chapter headings. Through the years he had collected notes, always stressing uses of American plants. Chapters 24 and 25 are completely Barton's own, though his notes are interspersed throughout the text. Among his notes:

> [Last note p. 246:] *We are here obliged to observe that Dr. Cullen has, in our opinion, been very unfortunate in the position which he has assigned to the plague...The proper position for this disease was near to typhus, in the order febres. We are inclined to consider typhus and* [illegible] *as merely varietas of common species; and to the same specific head we would refer the Professor's typhus icterodes, or yellow fever of America. A genuine specific mark of distinction between the three diseases, we have not*

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653 *Med. Repos.* 2 (1798): 72–74; reprinted in later issues in modified form.

654 Miller, *Brief Retrospect* 1: 308.

655 Pennell, "Barton," 115; John S. Doskey, Ed., *European Journals of William Maclure* (Philadelphia, 1988), Intro., esp. xx. Scandella, visiting from Venice, was elected a member of the APS 20 April 1798, T. P. Smith and Maclure 19 July 1799 (APS "Minutes," 270, 283). White, "Maclure" is in *DSB*. Smith's diary manuscripts are at APS.

656 Barton papers, APS.

657 APS, "Minutes," 276.

hitherto been able to discover, either in our intercourse with the sick, or in the perusal of many authors who have written on the subject...

One note was composed on the verso of a letter from Elisha Hall: p. 426:

It is sufficiently obvious from the preceding observations and from many others which occur in this work that the author did not live to completely emancipate himself from the notion of humoral pathologists. I believe there are few enlightened physicians of the present day who repose much confidence in Dr. Cullen's notions [respecting] *the putrescent state of the fluids, whether occuring in fevers or in other diseases. Neither the ordinary tests which we employ in determining the odours or the tastes of bodies, nor the chemical analysis, which within the last twenty years, has been so essentially improved, have afforded us many facts, upon which to rest such a theory as that of the Edinburgh Professor. The theory is subverted by all our most just views of Physiology.*[658]

One page of Barton's notes, somewhat scratched out and altered, treats "bark," that is *Cinchona*, quinine bark, used to reduce fevers, which at that time were not understood:

There is the use for an inflammatory disease in which the bark has been used with advantage. I shall state the case: In Pneumonia it sometimes happens, that the pain of the side continues after repeated bleedings, and when the loss of blood by general bleeding cannot be carried farther with safety. In such cases blisters are highly important applications. But in these uses it sometimes happens that the pain is not constant but returns periodically. That is in one part of the day the patient is nearly free of pain but in another part of the day, a fever comes on, accompanied with pain. Here the disease assumes an intermittent type, and from my own experience I can say that the bark may be exhibited with safety. I have in a case of this kind used the digitalis in combination with the bark with great advantage.

His "Medical Notes" demonstrate his wide reading of plant accounts, and their histories. Of a member of the nightshade family he recorded comments on *Strychnos nux-vomica*[659] and its uses:

Ignatia Amara. The Faba St. Ignatii, commonly called Faba indica, is a native of the Philippine Islands. The fruit of this tree was first brought to Europe by the Jesuits, and on this account it received the name of St. Ignatius's Bean, in honour of Ignatius Loyola, the founder of the order of Jesuits.

The seed [is] *perhaps the most intense bitter that has hitherto been discovered. If the smallest portion of this be applied, even for a moment, to the tongue, it leaves a durable sense of bitterness upon that organ...bitterness evidently combined with a narcotic quality...*[660]

His course in materia medica, as with his other lectures, related personal and his pupils' observations and experiences fortified with views of Dr. John Hunter and, particularly, those

658 Barton papers, APS.

659 [The ethnobotanical source of strychnine.]

660 Barton papers, APS. *Strychnos ignatii* Berg, according to Surgeon General's Library Cat.

of Cullen. Daniel Hardaway's notes taken in Barton's class on 19 November 1804 illustrate the lectures' content. Citing Cullen, this pupil records what was believed to be the necessary role of sugar in the diet:

> *It has been doubted whether sugar alone is nutritious, or becomes so only when united with eleaginous matter... We know that in many parts of the world, especially in the Islands of the South Sea, the natives live almost exclusively on fruits which contain a very large proportion of saccharine matter... It is ascertained by the experiments of Margraff that all vegetables are nutritious in proportion to the quantity of sugar. We may take the beet for an example of this—All the farinacea contain a large quantity of sugar. Mr. John Hunter who was certainly very competent to judge of the case, was so well convinced of the nutritious quality, that he was in the habit of prescribing it in cases of convalescence from syphilis, in which there was great emaciation & debility from the use of mercury—Many facts evince its highly antiseptic property—Even dead bodies resist putrefaction when immersed in it—It was used by the Babylonians in embalming. The bodies thus preserved are said to be more sound & firm than the mummies of Egypt—Another proof of its antiseptic quality is that those persons in the East Indies who use a large quantity of sugar are seldom afflicted with scurvy—Dr. McBride, probably without knowing this fact recommends it as a part of the diet of seamen...*

What MacBride and Barton did not realize was the important role of vitamins in the fruit to seamen and South Sea Islanders.

Under the heading "Stimulants," Hardaway continued:

> *Dr. B. places opium at the head of the class of stimulants, altho' he considers its stimulant property inferior to several plants of the order Solanaceae—It is the product of the Papaver somniferum of Linnauz —The largest quantities are made in Egypt & in Turkey—The natives of these countries are much addicted to the use of it, as it answers the purpose of wine which is forbidden.*[661]

Hardaway also recorded that:

> *The filings of tin are frequently employed for the purpose of destroying the worms of the alimentary canal: it is probable that the operation of this substance is entirely mechanical—It is said to have been of service in cases of epilepsy, probably, in those only which have been caused by worms. It has been given in doses of 1 or 2 oz. in the 24 hours.*
>
> *LIME—pure lime used in dyspepsia: may act in two ways, by neutralizing acid or as a tonic. The muriat of lime has been much recommended in scrofula & curved spine—Dr. Barton relates a case of scrofula which occurred to himself successfully treated by murt. of lime—He began with doses of 10 or 12 grs. & increased it to 70 or 80 in the 24 Hours. The Dr. also relates a case of Goitre cured by this medicine dose 100 drops in 24 hours.*[662]

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661 CPSP.

662 Hunt Institute for Botanical Documentation, "in a Bound vol." 98 pp.

Richard Grier (d. 1808) preserved his manuscript notes from Barton's lectures in 1806–1807. On 11 November 1806, Cullen supposes, "long sucking to produce rickets. But this cannot be correct for there are the Indian children who always drink the breast for one year?" (p. 6). When Barton was a pupil of Shippen, a patient took a large dose of *Sace saturni* (20 grs. in one day) without any bad effects. Grier had trouble with botanical names: "frozera verticulari[663] found on the Ohio and in 'Tenisea' is as good a medicine as Columbo and goes by that name there. It ripens in the latter end of August which is the proper time to obtain it for medical use."[664]

Quotations from the lecture notes of Samuel Pickering during the winters of 1808–1809 are perhaps the most detailed and informative that survive, illustrative of the state of the subject at that time.[665] Our selections, in abstracted phrases only, suggest not only the topics treated, but show some of Barton's attitudes toward the veracity or state of knowledge of printed or anecdotal record. Behind his materia medica flowered his knowledge of botany.

Of Sensible Qualities of Plants: Color, taste & smell. "Indians of our country always taste and smell a plant before they will give an opinion of its nature." Some plants or animal substances known to be poisonous lack taste or smell. Barton took six or eight drops of rattlesnake venom undiluted on his tongue, rubbed it on his lips and roof of his mouth. In a short time he had a burning sensation, like that produced by *Arum triphyllum*. He would not, he stated, taste it again. Cullen's rule: those substances that do not affect senses of taste and smell are inert and useless; of no value in materia medica. Barton himself finds some exceptions, e.g., the venom of viper. He had written an account of his tasting rattlesnake venom in an open letter to Lacépède on 31 October 1802:

> *I have ventured to apply a portion of the undiluted venom of a rattlesnake, recently thrown from its fang, to my tongue. I made this experiment in the presence of several gentlemen. But I do not think I shall venture to repeat the experiment. I did not find the venom insipid, as the abbé Fontana and his servant did the venom of the viper, I had, on the contrary, a peculiarly ungent taste, a pretty strong sense of heat upon my tongue and fauces.*[666]

To return to Pickering's notes:

Of arrangement: "Prof. [Johann Andreas] Murray's work [*Systema vegetabilium*] is very valuable." Are there any "specifics"? No, some plants affect one part of a body more than others. Barton proposes the term *idiopathetic* for those effective on some particular part of the body.

Of mucilage: gum arabic, gum senegal, gum of cherry tree. One thousand persons journeying to "Grand Cairo" were supported by gum arabic for three months. Dr. Cullen says gum arabic is nutritious, composed of acid, sugar and oil, but we must not depend on Cullen's analysis because a rabbit which lived fourteen days on gum arabic was leaner than before that diet.

Of sugar: Mr. John Hunter advised sugar and honey "to those who had been reduced by the use of mercury in syphilis." "Disappearance of lepra is owing to the introduction of syphilis which I consider the same disease." Humboldt extracted sugar from fungi. "I once cured myself of Melitis by a vegetable diet." Equal quantity of honey is more nutritious than

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663 [*Frasera verticillata* Raf., 1828, also referred to *Frasera caroliniensis* Walter, 1788, American Columbo Root, Green Gentian. IPNI. ITIS.]

664 CPSP, "b", 106–60.

665 Manuscript bound in calfskin, 2 vols., 203+273 pp., indexed, Newberry Library, Chicago.

666 *Philos. Mag.* 22 (1805): 206.

that of sugar, owing probably to the laxative quality of honey (p. 25). The late Dr. John Hunter cured his asthma by the use of honey for two years.

Of Oil: Doctor Franklin found butter very nutritious, "kept his bowels open and at same time supported his strength." (p. 28).

Of Calcareous Earth: Linnaeus says Laplanders make a bread of fish bones mixed with pine resins. (p.32).

Of Milk: "Red cows give generally more cream than cows of any other colour. The same observation applies to females of the human race: milk of pale women is less rich than those of dark complexioned ones." (p. 39). Dr. Cullen says a plant called "marsh dog" in England is used to increase cream by rubbing the milk pail. In the production of milk, its origin is chyle, etc. There is an effect on a child of calomel or other substances administered to the mother. It has an effect on her milk. Gout is often founded in a plethoric state of the system yet milk is useful. But Barton does not agree with Cullen that milk may prevent gout. "I do not consider milk as a proper article of diet for a sedentary adult." (p. 51). Dr. E[rasmus] Darwin observes milk is not important for a particular diet if a person is addicted to the use of alcohol. There is an observable connection between gout and calculus. Milk has been recommended in calculus complaints. Calculus and nephritis happen in persons who subsist on a vegetable diet.

Of Light: In this next topic Barton harks back to his Edinburgh interests and the topics discussed by Samuel Stanhope Smith in his *Causes of the Variety*. "Children born of negro parents are not black, blackness seems to arise from combination of air with the basis of black colour in the rete mucosum, this is probably carbone and combines with oxigene, the combination accelerated by the agency of light." (p. 37). "I think that a negro child born and bred in the mines of South America would be much whiter than otherwise."

Whether the negro and the white man are specifically the same?: (p. 37). Barton says he may be forced to concede that climate alone is not responsible for differences in color, but there are "some original differences in their structure."[667] "These sentiments, gentlemen, I would not wish you implicitly to adopt, but would advise you by all means to think for yourselves, and it would afford me great pleasure if any of you by your future investigation should more completely illustrate the subject" (p. 38).

Medicines: He talked on astringents, giving a few examples, "*Cortex-querci*–oak bark" of galls and mistletoe; of "Kino" which Fothergill says is gum from "Pau de Sangue of Senegal" (p. 68), which was mentioned by Humphry Davy, but Barton does not know its botanical characters; of "Cathecu vel Terra Japonica," showing that he read widely of "*Uva ursi, Geranium maculatium, Heuchera americana* [American Alumroot], *Orobantia virginica* [*Epifagus*]," and *Rubia tinctorum*. Of mineral astringents he mentioned "Alum" for both internal and external uses, and "Plumbium lead." Of vegetable tonics he listed about thirty-eight species, both native and old European remedies, "Grey Nicol" from the West Indies; *Serpentaria virginiana*, Snake-root, quoting Dr. Pringle; fourteen species of *Cinchona* with "Linneata from St. Domingo"; and *Xanthorhiza*, about which he says that Dr. Woodhouse in his thesis "has very probably praised it too much" (p. 110). Pickering's notes began with a quote from Paracelsus and concluded with Barton's admission "of the use of our medicine in yellow fever I cannot say a great deal."

According to the notes taken in Barton's materia medica class in November 1803 by a student, Sewell,[668] pursuing his degree under Rush, mahogany, *Swietenia* "is the best substitute for the Peruvian Bark. The common Dogwood is nearly as efficacious in the cure of intermittent as the Cinchona peruvianum.[669] The red Willow. The bark of this tree is more brittle and powerful than the C. peruv.: see Dr. Walker's Dissertation for 1803." Dr. James

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667 Possibly related to Barton's interest in skin color was his acquisition of his portrait (Figure 31) of a Hottentot girl by William Haines sometime after 1802.

668 LC. Is this Thomas Sewell of Ipswich, Massachusetts, who finally took his degree at Harvard in 1812? See Appendix II, Roster of Barton's Medical Pupils.

669 [*Cinchona peruviana* Mutis is referred to *C. officinalis* L., 1753, Quinine. IPNI. ITIS.]

Walker wrote to Benjamin Rush from Mount Rush, "100 miles west of Richmond," Virginia, 10 August 1800, quoted and excerpted here:

> *Uva ursi...used with incalculable advantage in nephritic complaints...its good effects were greatly increased by the largeness of dose. Yellow gentian has been useful in preventing the inflammatory paroxysms of gout when given in substance. Gentiana centaury or lesser centaury can be recommended in fever gout. The Centaury is an indigenous plant and possesses properties in common with quassia which receives its name from the negro who discovered it. Quassia amara proves beneficial in hysteria, and Dr. B. cured a case of epilepsy with it...Alcia or leopard's bane. This has been celebrated as an excellent discutient of coagulated blood, &c...Dr. B. thinks that it does not deserve these enconiums tho' it is a powerful medicine. Aesculus flava or Buck Eye. It is a good subject for an inaugural dissertation, since its properties are but little known.*[670]

To supply his materia medica pupils with potential experimental subjects, to satisfy his own curiosity, and to "extend our knowledge of the indigenous vegetables," Barton solicited new kinds of plants and more information on well-known species. From far and near there came to him bits of folklore and requests for information that correspondents hoped he could answer. Josephus B. Stuart of Philadelphia wrote him on 6 January 1810 that "Helleborus trifolius[671]" is sometimes used with *Quassia amara*, the genus named by Linnaeus for a Surinam Negro sorcerer, as a safe and excellent tonic.[672] A communication came from "H. C." on 9 January 1804 that:

> *During a sickly autumn in W. New-Jersey, about four years ago, I had that kind of lingering intermittent, which the people call Fall-fever: whose simptons are, a moderate, but always continual, febrile indisposition, a constant and general uneasiness; nervous debility, derangement of the stomach, and all the viscera connected with it. By the advice of several judicious persons I tried the bark of the Dogwood in decoction; and found after a few times great relief. The cure was probably facilitated by the gradual coolness of the season, but still I had reason to esteem it above the Peruvian bark in this case. To me it was also less nauseous, tho' very bitter. Its quality is penetrating; being felt, as it were, through the whole system. The strength of the decoction must be regulated by the feelings of the patient.*

The writer then adds "Dear Sir, This can be truly stated on the subject. You may introduce it in part, or in a different form, at pleasure."[673] Barton had already learned of the substitution of dogwood bark, and of red willow, for Cinchona bark, since he had lectured on them in November of the previous year.

James Geddes wrote to Barton "On the use of Cod-fish" in curing goiter. The people of Manlius, one of the military townships of New York, become more and more confident of its effectiveness. They eat the fish, drink the water in which it has been steeped, and tie a fish

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670 Archives, PhP.

671 [*Helleborus trifolius* L., 1753, refers to *Coptis trifolia* (L.) Salisb., 1807, Threeleaf Goldthread. IPNI. ITIS.]

672 *Quassia* L., 1762, Simaroubaceae, was imported from South America and was also used as a vermifuge. Groman [Great Man] Quasy [or Quassi] first used the plant, as reported in John G. Stedman, *Narrative of...Surinam*, ed. 2 (London, 1806), vol. 2: 359-361, portr.

673 Barton papers, APS.

around the neck. Geddes himself was skeptical.[674] Goiter had been an early interest of Barton, dating at least from his trip into Ohio in 1785. He queried both Heckewelder and David Zeisberger[675] on their observations among the Indians, and he sought answers from those he visited while on his trip in New York State in 1797. Geddes at Onondago told him that more women than men, but also sheep and horned cattle, were affected in that area. Valentin won a gold medal for his extensive memoir read before the Academy of Surgery in Paris in 1798, according to a letter he wrote Barton from Paris on 20 August 1798. That may have been a stimulus to Barton to publish his *Memoir on Goitre* in Philadelphia in 1800. It had appeared in German journals in 1797.

Barton wrote in his *Memoir* that particularly in upper and western New York State, especially near creeks and rivers, he found cases, as was true in the vicinity of Pittsburgh. He suspected the water, but Heckewelder wrote him that the disease occurs where there is no limestone, and Barton had noticed that goiter is unknown in some of the most calcarious parts of the country. Dr. Stevenson informed him that well water drunk at Pittsburgh did not increase the occurrence over the time when river water was drunk. Barton rejected snow water as a cause despite Johann Reinhold Forster's belief in which he accounted for the high incidence in the Alps. Ice cream, recently introduced into Philadelphia, caused Barton's tonsils to swell, but did not affect his thyroid. He also concluded that the disease is not coal-related, nor plant, nor diet. Perhaps it is the humidity from marshy areas. Maybe its occurrence is influenced by valleys, especially on southern exposures.

Some ideas Barton rejected forthwith: that carrying heavy loads on the head, or suspended from the head, caused the disease; that vomiting, especially during pregnancy, was responsible; or that heavy breathing during labor—perhaps. An informant vouchsafed the best method of curing this disease. "The tumor must be bathed with the spittle of a virgin, and by the virgin herself *dum fit in menstruis.* I was assured," wrote Barton with tongue in cheek, "that the diseased person makes no further use of the virgin." He felt no confidence in bleeding, mercury, etc.

In response to the *Memoir* on goiter, Hugh Brackenridge described the situation at Pittsburgh as "perhaps favorable to that heat and stagnation of air," but Barton conjectured that the topographical history must be more complete before the "cause" can be ascertained with certainty. The disease, he noticed, prevails to the greatest degree in the neighborhood of the lakes—there is a "close affinity between the soil & goitre."[676] How very close he came to the effect of glacial soils on lacking iodine content and the effect on water and food grown on such soils!

William (M?) Brackenridge added comment on the *Memoir*:

> *Pittsburgh July 28 1801*
>
> *Sir,*
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> *I have read your publication on the subject of the goitre or swelled throat and think it valuable on account of the history of the swelling, and collection of facts; but as to the cause, am still at a loss. I cannot think it has any connection with miasma. It has nothing to do with bile or fever, the natural effect of miasma. Health accompanies it: the complaint of the part is all. I incline to your first hypothesis—a humid and relaxing atmosphere. Children are born with the complaint. One in this town lately with it in a far advanced state. The respiration was difficult at the birth; and it lived but a short time—a few hours or days. The mother was greatly affected. Her imagination may have communicated the impression to the infant. But my*

674 *PMPJ* 1 (1804) Pt. 1: 36–37.

675 Letters of Scientists. CPSP.

676 Barton papers, APS.

first child was born with it in a slight degree, before the mother was at all affected. These things remain inscrutable. As the population of this country increases the malady becomes extensive—and is felt. It is a serious drawback. Humanity is greatly interested in the investigation of the cause and ascertaining a preventative or cure.[677]

John Black also wrote from Pittsburgh on 1 February 1803 a detailed letter adding little new, but summing up observations, adding that "in the United States the disease was not accompanied in the smallest degree, with a weak or impaired state of intellectual powers" as so often in Europe.[678] Barton continued to solicit information. George Wilcox answered his query of 24 August 1807, the letter marked as received 15 September, from Steubenville, Ohio:

With regard to the disease of Goitre I can give you no information of consequence. It is however worth remark that tho' the disease is so very general around Pittsburgh & its vicinity there are very few cases of it here (40 miles down the river) where the country is equally hilly, where Coal abounds. The swelling will arise and of itself disappear. Families [page torn] *be often affected with it slightly and it goes away of itself, so that in no disease is it more difficult to* [know?] *whether remedies have any effect. Having nothing more to say at present*[679]

From a Baltimore practicing physician, G. Williamson, came a request for Barton's paper on goiter.[680] Dated 20 July 1809, it read in part, "Respected friend, The friendly favours heretofore received from you, induce me again to intrude on you. Since my return from your City, I have been engaged (and have made some progress in translating) of Tourtells Elements of Hygiene."[681] Tourtelle mentions goiter, and not having Barton's paper on the subject, Williamson asked about the distribution of the disease, Indian occurrence, etc. He has long thought the French led in popular works. "Professor Nalle,[682] medical philosopher speaks of it as a distinguished work," and he thinks American readers will benefit from his translation and his notes. Williamson believes American physicians, Barton especially, are "not inferior to those of any country."[683]

In his Journal of his trip through western Virginia, on 9 August 1802, Barton had noted that one of the party, General John Neville, told him that goiter was increasing in Pittsburgh and that goats suffered from it. Dr. McKay had no knowledge of it at Berkeley, nor had Dr. Conrad.[684] A. Gregg, Jr., wrote from Bristol, Pennsylvania, 28 January 1805:

Some months before I had read your Memoir on Goitre (or in fact any other) I saw a dog in Byberry with a large pendulous tumor of the throat. It was entirely new to me & I examined it with much satisfaction—The tumor was 3 or 4 inches in diameter—hard & moveable under the skin—I could learn no particulars of the dog. It is mentioned because you say it is known only in New York.[685]

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677 Barton papers, APS.

678 Barton papers, APS.

679 Barton papers, APS.

680 Barton papers, APS.

681 It appeared as *The Principles of Health, (Elements of Hygeine)...* (Baltimore, 1819, 2 vols.), with notes. Copy LCP.

682 Unidentified.

683 Barton papers, APS.

684 Barton, *Journal*, HSP. John Neville (1731–1803), American soldier born on a large plantation on Occoquan River, Virginia, visiting his birthplace from his home in Pittsburgh (Frank E. Rodd in *DAB*).

685 Barton papers, APS.

Further confirmation that the disease was prevalent in formerly glaciated areas came from Augustus B. Woodward, who wrote from Detroit on 29 June 1810, after announcing Nuttall's arrival:

> *Mr. Nuttall also acquaints me that your enquiries have been directed to the disease of Goitre. It is very prevalent in these regions; but is confined I believe to the white population. It is particularly hostile to feminine beauty. The proofs are very satisfactory of its hereditary quality; and it is also too certain that after some removes in the descent it is accompanied, as among the Cretins of Switzerland, with idiocy. The proximate cause of the disease, or the reason why water impregnated with snow and ice has this effect on the glands of the neck, I believe is not known to physicians; but the remote cause of the disease here is I think sufficiently obvious. When you consider what an immense surface in high northern latitudes is ice, and snow, and that the inhabitants during a long winter, and short summer, drink it in a melted state, I am convinced you will ascribe it to this cause. In the other hemisphere the proofs are I think very clear. On the Alps you find the Goitre. The embassy of Earl Macartney shews also that it prevails in the North of China. In the South of China it is unknown. There is no cure known for it here. It frequently diminishes spontaneously. Sometimes it produces death by suffocation; and that more particularly where it is attended with fatuity.*[686]

Geddes had not appreciated the efficacy of the iodine in codfish, and Woodward had declared the absence of an essential in snow water. Barton was not able to publish his conclusions. Isador Greenwald, "Goitre," has comprehensively reviewed the history of the malady. He concluded from an extensive survey of travellers (using Thwaites's index) that the Indians of the Great Lakes, Prairie, and Rocky Mountain areas did not suffer goiter prior to the coming of Europeans. In many places, he wrote, it appeared first among whites or half-breeds, that it was more severe when it first appeared, and subsequently it diminished in severity. That goiter was present in pre-Hispanic Peru is due to an erroneous translation from the Spanish, copied by Barton for his *Memoir*, and from him by Birsch, and retranslated into Spanish by a Peruvian historian of medicine.[687]

A group of plants, *Rhus* species, their attractive leaves turning gloriously multicolored in the fall, naturally attracted the unwary. Captain John Smith had found that it "causeth redness, ichynge and finally blisters," but, if left alone, it finally disappears.[688] John Banister had found that "Poysonweed"[689] from the qualitie of its juice...turns linen black & will not loose it colour in the wash."[690]

James Smith, a pupil of Dr. Rush, who evidently took his degree in 1794, wrote as "your affectionate pupil" to Barton about poison ivy and its prevention by the use of bayberry soap. His undated letter details his frantic search for a remedy, and Smith found the soap a success. He also conjectured other uses:

> *Dear Sir,*
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> *While pursuing my academical Studies at Princeton (N.J.) in the vicinity of which I believe there grows more of the Rus Radicans or*

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686 Barton papers, APS.

687 Birsch, *Bull. Hist. Med.* 38 (1964): 275.

688 An account, "Short History of *Rhus* to the time of Linnaeus," *Amer. Midl. Naturalist* 19 (1938): 265–333.

689 [Both Poison Ivy and Poison Sumac refer to *Toxicodendron radicans* (L.) Kuntze and *T. vernix* (L.) Kuntze, 1891, respectively. IPNI. ITIS.]

690 Ewan & Ewan, *Banister*, 202.

common poison Vine, than any where else, I very frequently experienced its baleful influence—My deplorable situation excited the attention of the humane all around, whose prescriptions were boundless tho' destitute of the least efficacy. I believe the disease, if I may use the expression will cure itself, for it certainly runs it's course in about 11 or 12 Days whether remedies are applied or not—

A farmer of respectability and veracity informed me he had always been susceptible of this action, so much so as to prevent him from making hay, harvesting, or hunting without being seriously poisoned, and that he became more & more liable to it the oftener he was affected and the older he grew. But fortunately returning from the Sea shore where he had been gaming, a man advised him to make use of the Bayberry soap in shaving & that he would never again poison. Inquiring what it was he was directed to take 1 lb of the Bayberry tallow or wax, 2 lb. strong lye, & boil 10 or 15 minutes. when it becomes very thick. Pour it into shallow vessels and expose it to the sun 2 or 3 days when it is fit for use. As large quantities are prepared by the poor people of that part, he purchased several pounds, and resolved to make trial of this preventative—

This gentleman has been exposed to every species of poison vine for many years without being affected, But having used all his Bayberry soap, he thought he would make use of the other kind, and the first time he went agunning he was poisoned. He resumed the use of his prophylactic & has never since been affected, nor does he in the least fear it on any occasion.

His success induced me to make trial of the preparation, and although I have been exposed to the poisin Vine in hunting, strawberrying, &c. at all times of the day, I have never been the least affected—As a remedy I can attribute to it nothing more from experience than what is attached to other simple or common applications; but as a preventative it certainly merits attention. Query. If this soap possesses the property here ascribed, as is very evident at least there remains no doubt in my mind, is it not reasonable to conclude that it might in a similar manner be used to prevent Gonorrhaea & Lues Venerie in impure Coitions—

Your Affectionate Pupil &c—

James Smith[691]

Barton recorded a verbal communication that a George Gibson gave to Isaac Kagey, no date, of a novel treatment of consumption by a concoction of poison ivy taken internally:

Many people, inhabitants of this County [Alleghany] *who were supposed to be in the last stages of a consumption have been restored to perfect health by taking the decoction of a vine, the receipt for preparing which I now give you, first assuring you that the fact is too well substantiated to admit of any the least doubt—The many persons who have been cured of pulmonary Complaint, some of them very bad, give me hope, give me the strongest assurance that you desire the same advantages from using it...*

You are to cut this Vine into pieces of 10 inches or a foot long, take the bark carefully off, divide these pieces into as many Slips as you can, throwing away the bark and Pith—put as many of these slips as a man can grasp between both hands into a clean Iron Pott with one Gallon of water, which by Boiling reduce to something better than a Pint, of this decoction,

691 Barton papers, APS.

which you may sweeten to your Palate, take three wine glasses per diem, at three equal periods, beginning in the morning fasting–

N.B. the above is verb. from George Gibson to Col. Isaac Kagey.[692]

Barton left no note as to whether he ever got around to trying this for his own problem with his lungs. An imported member of the same family [Anacardiaceae], *Metopium toxiferum*[693] had a serious effect on a Georgia lumberman:

J. Parrish informs his respected friend Professor Barton, that in addition to the two facts mentioned to him this morning of the Turner and his Apprentice he has since been inform'd that a Person who assisted in sawing one of the Logs at a Saw Pitt in the Southern Libertico has been similarly affected–The Wood is brought from the West Indies–

7th day evening [no date][694]

Barton had queried his faithful correspondent John Heckewelder at Bethlehem back on 22 August 1795 on the effects of *Rhus*: "Last month, I was very severely poisoned by the poison-vine...Do you know if [Indians] are as liable to be poisoned by it as white people are?...I am preparing a little paper concerning this plant, for our College of Physicians." Heckewelder promptly responded, first giving Barton information on the Indian words he had accumulated. He then continued:

I am well acquainted with the Poison Vine You mention. There are 2 Sorts; the roughish 3 Leafed; & the smooth 5 leafed; the latter by far the most Poisonest. In my Younger Years, I durst not go near to this Vine, nor touch it, if I meant to escape the disagreeable effects it would have on me in so doing. The first attack it made upon me was in gathering Wild Grapes from a Vine that had run up a Tree, & round which also a Poison Vine had run up. A Shower which came on at the same time, probably added to the very bad effect it had on me at that time; for my Head, face & hands swelled up amazingly, & I was blind for 2 days, my Skin turning quite black. All the Physician could do would not relieve me; I was informed that I in all probability would Die; when an Old Lady from Shrewsbury in Jersey hearing of it, immediately gathered Night-Shade, (I believe it is called Solanum) had it mashed, & the Juice pressed out, & boiled up in sweet Cream to a Salve. This Salve which is of a very cooling Nature, gave me such relief that the swelling (as I was told) almost visibly decreased. The Black Skin like a Crust as it were came off, in large pieces, & I could see well again in the course of 12 Hours. I have since seen many Persons badly Poisoned by this Vine, also Indians. The latter either take Salt mixed with Water and wash the swelled Parts well with it, or, if they have not Salt, gather the common Plantain (Plantago major) which they put over a Fire untill well withered, then squeeze out the sap or Juice & rub it over the swelled Parts & tieing or keeping the Leaves on such Parts–Salt, however, is much preferred by them especially if applied immediately.

Heckewelder then included a note on Indian names:

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692 Gilbert collections, CPSP.

693 [*Metopium toxiferum* (L.) Krug. & Urb., 1896, or Florida Poisontree, Anacardiaceae. IPNI. ITIS, TROPICOS.]

694 Barton papers, APS.

N.B. The above Plant they call Ariyoshu, which signifies the plant that groweth by the Side of Paths, or Roads. The above mentioned Poison-Vine what Zeisberger marks Putichiskteg, which is the Name the Delawares have for it.

My own remarks on this Vine are: that I suppose them to be not always alike Poisonous, as I have at times been obliged to walk thro them, & even encamp among them, where they have not hurt me;[695] *whereas at other times, When I had taken the greatest care to keep out of their way, I was poisoned more or less. Perhaps however this may be put to the state the Body was in at such times, whether in Presperation or not &c.*

Having in the Year 1778, when on a Journey with Indians from Muskingum to this place, turned our Horses one Day to feed by the way, & observed my Horse to feed entirely on the 3 Leafed Poison Vine, I ran to tie him up, as I was sure I should loose my Horse. The Indians observing this, assured me; that the Horses feeding on this Vine, would not hurt the Beasts. In the end they proved to be in the right. This was in the Month of October after some sharp Frosts.

The Poison Vine, I have seen more or less in all my Travels; but no where more than in some places on the low Grounds on the Ohio, but particularly on the Wabash, where the 5-Leafed kind is low & in abundance in such places where the Reed is thin, also groweth up with the common weeds. whereas the 3-Leafed runs up to the top of the highest Trees, & by winding itself so tight on some, deadens them entirely.

There is also a kind of Poisonous Shumack, which I have seen in many places in my Travels.

Then after some notes on Indian language:

I must conclude this time, but shall write to You shortly again; whatever services I can render You towards the great work You have undertaken, shall be done with cheerfulness. Believe me to be Dear Sir, Yours respectfully, John Heckewelder

[Envelope:] *Rec'd Aug 26 1795*[696]

The effects of poison ivy Barton describes in Part II of his *Collections*, but does not refer to Heckewelder by name. The "3-leaved Poison Vine" on which Heckewelder's horse browsed was perhaps a variety of *Rhus aromatica*, a non-poisonous fragrant shrub. Heckewelder had walked and encamped among bushes of this species without harm. Thomas Horsfield treated of *Rhus* in his medical thesis in 1798.

J[ohn] L[amb], perhaps in Philadelphia, wrote out for Barton an account of May apple, *Podophyllum peltatum*, dated 27 April 1797:

The root of May-apple I had long been informed was an excellent, mild & effectural purge—this encouraged me to seek for it in the month of April, at this time it is riss above ground, & the roots Safily taken up—I was advised by a Physician of Philada. (who had experienced the effects of said root when well dried & powdered,) to dry all I gathered, & when occassion called for the use of it to make it into a powder & take a Tea spoon full with or without the addition of a few grains of Calomel or some Chrystals of Tartar, but not imagining I should be injured by chewing a little of it when

695 He may also have confused the shrubby *Rhus aromatica* Aiton with *R. glabra* L.

696 Barton papers, APS.

just dug up, I did Chew 3 or 4 bits of the root, the bigness of a small quill—2 or 3 Inches in Length, & reason I had to repent of Swallowing the juice of it—not that it gave me any pain, but took away my taste almost Entirely for 3 Days, however on swallowing a Tea Spoonfull of Jalap the 4th morning it purged off the ill consequence, & my taste gradually returned to its usual state—I must not omit noting that the Crude juice of the root taken into the Stomach did not purge, but inclined to Puke Some hours after—this gives reason to conclude it is not propper to take it till well dried & powdered—I intend to try it again when powdered, & first by itself—the next time I will mix 4 or 5 grains of Calomel—again I will mix Crystals of Tartar—again I will mix equal parts of this powder & Jallap, when I hope to discover which is most adapted to my constitution, & this rule I think ought to be adopted by all who wish relief from this root alone, or combined with other matters—J L[697]

Tuckahoe never ceased to puzzle. Allying it with Truffles Barton wrote in his *Cullen's Treatise*:

Tuber Tucca, Tuckahoe. I am induced to mention this article in this place, from a desire to call attention of physicians and naturalists to it, and not from the hope of being able to say anything very important concerning it. The tuber tucca, as I denominate it, is a solid subterraneous vegetable production, belonging to the Linnaean class and order of cryptogamia fungi, which often acquires the size of a man's head, and weighs several pounds. It is chiefly composed of a whitish farinaceous matter, which has an agreeable, somewhat sweetish taste, and is unquestionably a very nutrious substance. It was formerly much employed by the Indians in many parts of North America, as an important article of diet. The name tuckahoe, by which it is known in the United States, signifies 'bread plant.' Powdered and mixed with the meal of rice, it forms a delicate cake, which is sometimes met with at the tables of the southern planters.

It is much to be wished that the chemical analysis of this substance, and its real affinity to the farina alibilis of the cereala and other vegetables, were pointed out by some hand. See [and he refers to Discourse, 46][698]

He had pursued information through a pupil whose father, John C. Scott, replied, the letter dated Halifax, Virginia, 11 July 1812, and received later that month:

Dear William...It would be a source of much satisfaction to me were I able to afford Doctr. Barton any assistance...As to the Tuckahoe, I scarcely recollected that there was such a production...After inquiring of the neighbors I find it to be very common, and generally known—yet there are no particular indications for finding it—It is generally found in clearing & breaking up Spanish oak ridges—it is a very little below the surface having neither top nor root—its largest size twice as big as a mans head, & some are found less than a fist—as variously shaped as potatoes—I can hear nothing of their growth or reproduction—they appear to have no relationship with

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697 Barton papers, APS, the letter on the verso of broadside for Joseph Hawkins, *History of a Voyage to the Coast of Africa...* (Philadelphia, 1797).

698 *Cullen's Treatise*: 182. For Banister's account of about 1690, see Ewan & Ewan, *Banister*, 392-393. Tuckahoe has been identified by Dr. F. A. Wolf in *J. Elisha Mitchell Sci. Soc.* 35 (1922): 127, as *Poria*. John Torrey in 1819 had named it *Sclerotium giganteum*, and S. L. Mitchill published it in *Med. Repos.* 6 (1819) hex 2: 34-44.

other vegetables or dependence upon one another–I will certainly obtain a few and forward them as specimens to Doctr. Barton–but tis not possible to say at what times as they are found accidently only.[699]

Medical historian Dr. James Thacher of Plymouth, Massachusetts, a busy surgeon during the Revolutionary War, had published *The American Dispensatory* (Boston, 1810). He reminded Barton that he had agreed to give him corrections "respecting errors." Although his earlier letter has not survived, "canine madness" may have been a topic: Thacher published "Observations of Hydrophobia" in 1812. "American Colombo," *Frasera carolinensis*, mentioned in the following letter, was called "Indian lettuce" by William Bartram. Colombo of the East Indies, the bitter tonic, is *Jateorhiza palmata*. "Indigo weed or common broom" of Thacher is the European *Cytisus scoparius* or, as he cited the earlier name, *Spartium scoparium*.

Plymouth, Mass. June 13th 1812

Sir

I beg leave to present for your acceptance a small production on the subject of canine madness, whether it will afford you any satisfaction is uncertain. You will permit me to remind you that in a former letter you was so obliging as to say that you would communicate to me some observations respecting errors in the American new Dispensatory. I am now engaged in preparing for an improved edition of that work, & any suggestion relative to the improvements of which it is susceptable will be extremely acceptable.

I am solicitous to obtain some particular account of the American Colombo. I am in possession of a quantity of it said to come from Pennsylvania which appears to be greatly inferior to the foreign root. It would afford me satisfaction to be informed where it is produced & to have some description of the plant.[700]

The plant known here by the name of Indigo-weed or common broom is found to possess medical properties, I am at a loss to determine as to the proper botanical term for it. Is it the Indigofera of Linn. or the Spartium scoparium[701]*? Is it to be distinguished from the Genista?*

I have not yet seen your late work on Botany[702] *but intend to procure it soon at Boston, & anticipate much information relative to the plants of our own country.*

I am with great respect Sir, your most obedt. & very humble servant–
James Thacher
Received July 21, 1812.[703]

From Charles Josslyn, Oxford, New York, 9 November 1807, came this note:

Sanguinaria Canadensis, the Podophalum [*sic*, Podophyllum] *Peltatum Lobelia syphylitica and a species of Contrayervae grow here in great abundance. The Countrayervae*[704] *is reckoned by the common People an excellent soporific and I believe myself it possesses that property. I have*

699 Barton papers, APS.

700 Alexander Wilson in the spring of 1810 recalled "I found the Colombo plant in great abundance, and collected some of the seeds. Many of the stalks were more than five feet high" (Ord, "Wilson," lxxix).

701 [Now *Cytisus scoparius* (L.) Link, 1822, Scotch Broom. ITIS. IPNI. TROPICOS.]

702 Was the reference to *Flora Virginica*?

703 Barton papers, APS.

704 *Dorstenia* of the apothecaries, from tropical America; perhaps *Cynanchum vincetoxicum*, German contrayerva.

> *used it in particular stages of the typhus Fever that prevailed here a year ago last summer and I think with good effect. There is no doubt of its being a very good Diaphoretic.*[705]

"Dr. Darlington informs me, that in Jersey, *Galega virginica* is called 'Cat-gut' & 'Worm-root' from the account he received he takes it to be a plant of active properties as an antihelmintic [*sic*, antihelminitic]," so recorded Barton September 1810 in his Botanical Notes, No. 7. In his Medical notes, on "Superfoetation" he recorded:

> *The different grains upon the same ear of Indian corn, have been impregnated by the pollen, at very different times. In the case of the supposed human foetuses, one of the little creatures, from some reason, unknown to us, one of the germs had been as incapable of as much growth as the other.*
>
> *It is the opinion of Haller, and the opinion seems in favour of the doctrine of superfoetation,—that the orifici of the femur is always open to the semen; Be it so. But how is the semen to get to the carnia, through the adhesions of the chorion to the uterus. I think it possible, however, that superfoetation may take place, where the Woman has had copula with two men in quick succession, one after the other—here relate the American story about negroes, etc. Richerand.*[706]

Notorious stramonium brought a new crop of queries and reports almost every year. Dr. Samuel Cooper's dissertation was "On the properties and effects of the *Datura stramonium*, or common thorn-apple; and its use in medicine" (Philadelphia, 1797), and Barton mentions its use in the appendix to his *Collections*. In Part Two of the edition of 1804 he added the erroneous conclusion "that the disease of tetanus has often been induced by different poisonous vegetables," including *Datura stramonium*. Barton queried Reuben Safold about his experience with the poisonous nature of milk from cows who had eaten this Jimsonweed. Safold replied that cows seemed eager to eat it, and apparently suffered no harm, nor did the milk.[707] Among opinions offered as footnotes in Barton's revision of *Cullen's Treatise* is that Jimson weed "in the practice in the US...in many cases, afforded essential relief in epilepsy. Some such cases have fallen under my notice...I have cured several cases of mania and melancholia...but seldom found [it] of use in manias of great arterial excitement."[708] Two of Barton's pupils commented on its use in the treatment of asthma. Jacob Bigelow in his *Flora Bostoniensis* (Boston & Cambridge, Mass., 1814), 51-52, confirmed its "recently acquired great reputation"; and William Darlington in his *Florula Cestrica* (West Chester, Pa., 1826), 25, confirmed its popular use in West Chester precincts, although he cautioned "prudence and skill" in its use. Stramonium for asthma rests upon its antispasmodic effect, which relieves bronchial spasms.

"Equally poisonous and of no less utility in medicine," wrote Bigelow, is henbane, *Hyoscyamus niger*, the subject of Barton's winning essay in Edinburgh. Barton omits any mention of this plant in his notes in *Cullen's Treatise*. It may have revived memories too unpleasant. The use of henbane instead of atropine or belladonna, another member of the Solanaceae, in examination of the eye was first reported in 1825. In 1847 henbane was involved in the removal of a cataract.

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705 Barton papers, APS.

706 Barton papers, APS. Balthazar Richerand (1779-1840) appears in J[ean] L. H. P[eisse], *Sketches of the Character and Writings of eminent living Surgeons and Physicians of Paris*, translated by Elisha Bartlett (Boston, 1831). From Osler, *Bibliotheca Biographica* (Montreal, 1969).

707 Safold to Barton 21 Feb. 1808. Barton papers, APS.

708 *Cullen's Treatise* 2: 201.

On a lighter note, Barton wrote, "Of Coffee. I can, with great confidence recommend a strong infusion of this common and delicious article of the table, with or without sugar and milk, as a very useful medicine in cases of retention and suppression of the menses, accompanied with very weak arterial action."[709] Barton found opium a useful stimulant, following Cullen, who in his *Treatise of the Materia Medica* (Edinburgh, 1789, 2 vols.) cited the fact as reestablished by Sydenham, Berger, Boerhaave, Tralles, Heller, Erasmus Darwin, and John Brown,[710] but Barton had learned caution in its use from the unfortunate experience of Dr. Brown.

Just what did the Professor of Materia Medica think of the ideas of Dr. Brickell, who included information in his letter of 25 November 1807 from Savannah, Georgia, that:

> *We have had a series of obstinately dry weather, for near three months: it has injured our crops; our cattle that range in our extensive woods have partly perished from want of water; and the woods have been much on fire, to the destruction of the grass; an additional hardship on our poor cattle.*
>
> *The atmosphere has been excessively dry and smoky, and stimulant to the lungs—and we have lately had a universal catarrh, or influenza, of a very distressing kind. It has killed several; and worried many almost to death. I am told of some breaking of blood vessels by vehemant coupling—and many women, far gone in pregnancy, have miscarried, and even died of it.*
>
> *My negro women have escaped abortion by puting flannel next the skin; keeping their bowels moderately open by castor oil, or such gentle things; and suppressing the fury of the cough by dint of low diet, and laudanum, and not having an inhaler, I drew in air to moisten the lungs thro' weted linnen; and my negroes did the same, to our great relief. Those who could keep up a constant moderate drain from the bowels, by salts—an open skin, by antimonal wine—and use the pediluvium tepidum: with frequent small draughts of water and watery liquors, found much relief. Bathing the hands frequently in a bason of water, warm or cold, gave relief especially in the fever, which was apt to continue for the first 4 or 6 or 8 days. I remarked a number of circumstances in the air and season to give severity to our complaint, which is now generally on the decline.*

Here is his speculation as to the reason for all this discomfort—the comet:

> *In the midst of our doubt, and uncertainty as to the cause of the new and singularly powerful stimulus in our atmosphere, I have sometimes turned my eyes to the comet, which by its attraction or repulsion upon light, heat, electric and magnetic fluids, in the interstellary regions, and particularly in this part of our system, might form a new compound—and a new stimulus—or aid in increasing the asperity of acting or exciting causes.*
>
> *The hazy appearance, which held possession of our horizon, near three months, was lately dispeled by a friendly discharge of lightning and fall of rain.*
>
> *I have observed that our seasons are affected, when the bulk of the planets are on one side of the sun, and that our disorders partake of this circumstance, as if our weather, as well as the human system, were the more sensible, by proximity to the line. It is somewhat remarkable that our long series of winds have blown in a direction opposite to the path of the comet; which tends from the star on eastern summit of Mons Monalus to*

709 *Cullen's Treatise* 2: 411. [*Caffea arabica*, coffee, was described by Linnaeus, 1753.]

710 *Cullen's Treatise* 1: 186.

[?] *serpentis, thro the shoulder of Hercules to alpha Lyra, Deneb Cygni, and alpha Andromeda.*

It will be asked cui bono?, all this reverie–I say it will restrain us, usefully, from the use of the lancet, in this climate, without deliberation, where some diseases attack us with inflammatory appearances; but change place in a manner most fickle, leaving no appearance of phlogoss' [inflammation] *in a few hours, where it before appeared so vehement.*

In some athletic constitutions, bleeding was necessary. Generally it was safer to diminish the fluids by means less debilitating.

Then Brickell described his own attack, which severely affected his head, and all due, he seemed to have suggested, by the position of the stars in relation to the comet:

When I was first seized, I was affected with pilarity, my next sensation was like a plenitude of blood in the falx; next morning my scalp was seemingly raised with the pericranium, swelled like a pin cushion with blood–the affection moved into my upper jaw, and inflamed my gums, and right masseter muscle, so that I could not chaw, nor get my thumb into my mouth; it then made a short stay in my throat, and fixed itself in my lungs, from whence it is nearly gone.

Some athletic persons have escaped the complaint; some have had it vehemently–some have had it lightly–Dram drinkers have suffered–yet some have escaped!–Jug teneam hinc Protaea nodo? [Held in a yoke hence a Protean chain?]

Dear Sir, Yrs with the highest esteem

J. Brickell[711]

To a serious query of Barton's, Dr. Anthony Fothergill, while on his visit to Philadelphia, detailed his answer with sprightly humor on 12 September 1804:

As our late conversation, my dear Sir, respecting the medicinal virtues of the Common Hop[712]*, on which you did me the honor to request my opinion in writing, I shall very willingly lay before you the result of my experience...from memory. Several years ago I was induced to give it a trial from observing its effects in well hopped ale used as a common beverage, & afterwards to prescribe it as a remedy, in certain cases, in preference to other bitters. Formerly, in some parts of Europe, it was prohibited as a noxious weed of deleterious quality, & acting as a slow poison, & therefore fell into almost total disuse. So powerful is prejudice that articles of much higher celebrity, as antimony, mercury & even the Peruvian Bark had once nearly undergone the same fate. Happily for mankind, all these important articles, reviewed in their turn, & at length triumphed over the gross ignorance & superstition of the times. Happily too for the great Brewers, who annually vend many millions of gallons of malt liquor, that the hop instead of being deemed a poison, is now universally held to be one of the most wholesome ingredients in the composition. Otherwise, whence it is that the numerous votaries of ale, instead of dying a lingering death within 2 or 3 years, afford so many extraordinary instances of longevity? Among those may be reckoned old Parr who lived to 152 & the still older Hen. Jenkins who reached 169, both said to be staunch ale bibbers whenever they*

711 Barton papers, APS.

712 [*Humulus lupulus* L., 1753. TROPICOS.]

could procure it and had they not been unluckily deprived of it at last, might possibly have lived much longer. For good ale is barley wine & barley wine is the liquor of longevity & the liquor of longevity must consist of barley wine, & by a parity of reasoning (were this the proper place) I think I could easily prove that the celebrated Nectar of the Heathenish gods, which they are said to have quaffed very freely to render themselves immortal, was no other than fine Ale well hopped, with which their Bar maid Hebe, with a roguish smile, was wont to crown their sparkling goblets from a huge Butt of genuine October, the true Vinum hordeatus immortalitatis. Another favorite liquor of theirs, the Nepenthe which they used to drink occasionally to allay all their pains & griefs, & to give them a comfortable nap when jealous of one another, or plagued & vexed with other sublunary affairs, particularly the clamorous petitions of a set of querilous Mortals here below consisted solely of a flask of well hopped ale, a Butt of porter or a barrel of brown stout, & that the hop, not opium was the pain-lulling soul-soothing soporific ingredient which cheered away all their pains & griefs & wrapped them in Elysium...

Now as I claim the sole merit of this happy discovery I trust no wicked wight, thro' envy will presume to dispute my pretensions or strive to deprive me of the honor, by starting some unlucky objections by pretending, for instance, that it was not the hop that acted like a powerful charm but the spirit, the aqua vitae lurking in the liquor; mantling in the goblet & mounting to the brain. Or by still insisting that the hop, instead of being a divine cordial destined to exhilarate the gods, is only a vile noxious drug more fit to poison the Devil! an excellent hint...The common hop is not only one of the most pleasant & agreeable bitters yet known, but is also possessed of real anodyne soporific power, without the disagreeable effects of opium."[713]

Dr. Fothergill then suggests its use for almost any ailment from childbirth to toothache, in the last case both internally and externally. He then apologizes for this eight-page letter, hoping his "long laughable rhapsody" should serve to amuse, or now and then explode a smile, and that Barton will forget its prolixity and forgive a little harmless jocularity. Was it well-taken, perhaps shared? Barton edited the letter, cutting out some of the jocularity, and published it.[714]

Anthony Fothergill (ca. 1732–1813), M.D. Edinburgh 1763, F.R.S. 1778, came from the Westmoreland branch of the family, but was often a guest at the London home of Dr. John Fothergill. Anthony began his practice in Northampton in 1764, but inherited his mentor's practice in 1780. Not being satisfied with London, however, he moved to Bath with success until he retired in 1803.[715] He had probably brought letters of introduction from Dr. Lettsom. In June 1805 he travelled with Wistar to Lancaster, then along the Juniatta River to that frontier town "far among the woods and wilds, and over such rough roads as I have never seen before...the wild terrific scenery made me conceive we had entered on the confines of old Chaos!" They expected to see rattlesnakes or other "poisonous reptiles, but saw none," enjoyed trout fishing "and some agreeable rambles among the honest people," returned to Northumberland and "spent a pleasant day with Mr. Priestley's family and Mr. Thomas Cooper, viewed the laboratory, great burning lens, and other implements used by the late celebrated Dr. Priestley." Altogether they had ridden horseback about 500 miles, returning by way of Reading to Philadelphia.[716]

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713 Barton papers, APS.

714 *PMPJ* I (1804) Pt. I: 30–33.

715 Fox, *Fothergill*, 131–133.

716 A. Fothergill, Philadelphia, 5 Oct. 1805, to J. C. Lettsom, APS; Pettigrew, *Lettsom* 2: 423–425.

Not only human diseases, but those that affected that most essential means of transportation, the horse, concerned the physician. Was *Astragalus* the agent?

> *December 13th 1793 Mr. Will. Bartram says that a disease called the 'blind staggers' which, from his account, appears to be the same as 'yellow water' has frequently proved very mortal about Philadelphia. He has never known the disease in the southern states, where horses are let loose very much. He did not know to what cause it was owing but remarks it seemed to prevail more in some peculiar years than in others. Speaking of symptoms, he said, the horse turns round, falls, down, then gets up again. He did not seem to know much about it.*[717]

The "true process" of making castor oil was desired by George Wilson 14 December 1807, who wrote that it:

> *...is certainly a secret in this country, and I believe has never been published in books. I have tried methods mentioned with great accuracy and pains.—The oil obtained by simple expression, although the seed be fresh, is turbid, and what is insuperably worse, it has a hot and disagreeable taste, a little like Euphorbium [Euphorbia]. And as for boiling it out that's out of the question. I have no hesitation in saying it never was done. The seeds, it strikes me, must be somehow prepared before they are pressed, or the Oil purified after.*
>
> *My esteemed friend, (as your inquiries in the department which you fill are so unremitting and accurate,) are you not able to unravel to me this mystery. If you can I shall receive it very kindly.*[718]

Did Barton reply?

Prospective Physicians

During Barton's time, candidates for the two-year medical degree, the Bachelor of Medicine degree having been discontinued, had by new rules to attain twenty-one years of age by graduation. They had been pupils of a respectable physician for the past three years if a resident of Philadelphia. They were often given time off during their apprenticeship to attend college lectures, an opportunity that had been taken by Barton while apprenticed to Shippen. If they were country applicants, only two years' previous apprenticeship was required. Some knowledge of Latin was essential. Pupils received some instruction at Pennsylvania Hospital or the city Almshouse. A typical schedule for one term was described by E. L. McCall for the fall of 1804:

> *The disposition of my time is as follows; viz;—from 11 to 12, with Dr. Rush; from 1 to 2, Dr. Wistar; Wednesday & Saturday, Dr. Rush prescribes at the Hospital previous to lectures; and on Tuesday & Saturday, Dr. Physic lectures.*[719]

Each professor sold tickets for his own courses and set the hours for his lectures, subject only to an attempt to avoid conflicts. The student also paid a fee of a few dollars to the bursar

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717 "Medical notes misc. no. 4," Barton papers, APS.

718 Barton papers, APS. [*Euphorbium, sic,* for *Euphorbia* L., 1753. TROPICOS.]

719 Letter to Kollock, 24 Dec. 1804. Quoted in *Georgia Hist. Quart.* 22 (1938): 349.

on matriculation and a one-dollar fee for the use of the medical library. Barton has left an example of a contract between professor and pupil:

> *May 14, 1811.*
> *I have this day entered as a private pupil with Dr. B. S. Barton, for one entire year, or for 16 months, at my choice, with all the usual privileges of pupils under his direction, for which I agree to pay him the sum of fifty pounds, Pennsylvania money.*

The contract was written by Barton, and signed "James King, Montgomery County Virginia."[720]

Rush recorded: "My usual fee with an apprentice is £100 cash." In October 1791 he had six in his "shop." Wistar and Griffitts, he reported, take apprentices for less than that sum.[721] Examinations came in the early spring, commencement in the late spring. Inevitably there were those who failed in the examination for the degree, or did not take them, and so did not win a degree. It satisfied many rural patients to know that the physician had attended lectures and demonstrations at the medical school. There were also those who, for financial reasons, had to interrupt their endeavors, taking time off to renew finances. Daniel Drake of Cincinnati, Ohio, first attended classes in 1805, then returned on occasion to assisting a local physician and finally won his degree in 1816. Charles Caldwell resorted to seasons of teaching in rural schools.

Student costs then, as now, beset parents, professor, and college. At the medical school at that time, the student paid his class fees directly to the professor for each class taken—not as in our modern universities to the institution. Expenses must not be so heavy as to discourage the student's ambition to work for his degree. In 1798 Barton requested Robert Hunt, a professor at the University of Pennsylvania who was visiting Princeton, to secure information of costs at the College of New Jersey for room and board, tuition fees. On 26 July, Hunt was able to forward a printed circular that had been prepared for parents who had complained of expenses. It advised that food was about $2.50 a week, the year's total cost was figured at about $171.21, with "tuition, room rent, library, and accidental damages," $36.66. The rest went for a servant at 44 cents a month, fuel and light, washing, room and board. The circular declared that each student finds the furniture for his own chamber. This was usually a single mattress, with the cot and bed clothing, a table, shovel, tongs, and a few chairs. "Many young men aiming too much ostentation in their appearance, are apt to incur heavy and unnecessary debts for clothing, barbers, and horses...Horses and barbers are utterly unnecessary to students during the sessions of the college, and there are more than two-thirds...who never use them, except now and then a barber on a public occasion." The college offered to give out "only certain portions" at intervals as specified by parents for allowances deposited with the masters."[722]

As most of the pupils were from out of the city, from southern plantations or northern farms, they took lodgings in houses operated for their convenience usually by widows, often war-widows, or spinsters who must support themselves, or by families seeking to augment incomes. There were no college dormitories. Barton once took lodgings with a Miss Smith. Mrs. Tilton of 59 South Eleventh Street wrote him in an undated letter that she hoped he would "recommend her to a few gentlemen who might be in want of Board &c. as she can accomodate them."[723] A few favored pupils or apprentices were taken into the homes of their mentors. David Hosack was "domesticated" at the Rush home, and James Bartram and Thomas Jefferson Randolph stayed a short time with the Bartons, Randolph until he moved

720 Barton papers, APS.
721 Butterfield, *Rush*, 610.
722 Barton papers, APS.
723 Barton papers, APS.

to the Peales. Barton gave advice to his wife Mary on what to instruct "the young gentlemen" at home in order for them to carry on clinical practice during his absence. Professional families such as those of Mrs. Rush and Mrs. Barton had the benefit of servants, sometimes recent immigrants, free or bonded, to serve until they had earned their passage from Europe, or entered into marriage.

On one occasion Jefferson answered the queries of a Virginian, "Carter Esquire," regarding the medical school, and attesting to Barton's reputation. He wrote from Philadelphia, 10 July 1791:

> *Dear Sir, Your letter of May 24 arrived here soon after my departure on a journey to the lakes. I found it here on my return, which is but lately, and immediately set about the enquiries necessary for your satisfaction. I am well acquainted with Dr. Barton, & can assure you he merits the high character you have heard of him. I have no doubt that a student will be perfectly well pleased under him. Should your son board in town, I find that the lowest terms of boarding are 3 dollars a week. & the boarder finds his own firewood, candles & washing, which may be estimated at 40. dollars per year, to which must be added clothing & pocket money. I believe it is essential also that he attend a course of anatomical lectures & dissections, which will cost* [blank]. *I am possessed of an accurate estimate of the expenses of an economical student at Edinburgh, which are about 400 Dollars a year. this is probably something less than the whole expenses will be here annually. it cannot be denied that both the reputation & the reality of the means of information are in favor of Edinburgh, against which however a parent will feel some advantages in favor of this place. After weighing all circumstances should you decide in favor of this place, I shall with great pleasure* [give all the ad]*vice I can to your son, while I may be here. be so good as to* [end of that preserved].[724]

Can this be the same Charles Carter of "Ludlow co.," Virginia, who wrote to Jefferson 6 August 1791 that "A young Virginian studying under Dr. Barton says that he has added an entrance fee of £170 to the terms he took him on." This puts it totally out of his power to send his son to Philadelphia, and he has decided to "put him into a shop in Fredburg for a Year, or perhaps two, to make him acquainted with medicine, and...lay the Groundwork for his Education," after which he will send him to Edinburgh for two or three years as Jefferson advised.[725] Had Barton found the young Virginian without promise and had taken this unreasonable means of discouraging his continuing medical studies? Was it financial pressure? Or a painful attack of gout? Barton's usual concern for his pupils is suggested when James C. Madison of Williamsburg, in October of 1803, requested Barton's kindness to his son. "I wish him to imbibe from you a love for Nat. Hist. in all its Extent, & to get possessed of those leading Principles which may enable him to prosecute the Study, during the whole of his life."[726]

Benjamin Henry Latrobe wrote to Barton from Pittsburg, 23 Oct. 1814:

> *My dear Sir, The bearer is Mr. Bossman, a member of the Antes family & a distant relation of mine. His object in Philadelphia is to devote himself to the study of Medicine, under Your tuition, & that of Your Colleagues. You will find him an amiable & Modest Young Man, whose*

724 Massachusetts Historical Society.

725 Boyd, *Jefferson Papers* 22 (1986): 3.

726 Barton correspondence f. 62, HSP.

talents are still to be formed. I have told him that in Philadelphia, he may either become an accomplished & useful Physician or a knowing & thorough going rake, & that in fact, his outset will determine which of the paths he will pursue.—I have also ventured to tell him that in Your kind advice he will find the best instruction how to proceed. May I therefore solicit it for him: both as to the course of study, which you would recommend, and as to the minor consideration of boarding, & associates your counsel.

I need not ask you to excuse this liberty. You know how sincerely & affectionately I am & always shall be, Yours,

B. H. Latrobe[727]

There were others who began classes yet could not continue. Such was John Grimes of Savannah, who wrote to Barton in July of 1804, "a person without money cannot at all times, do as he wishes. This is my case. A want of it prevented my taking a degree before I left the University." As a favor to his professor, he had delivered four copies of the *Elements* to Savannah and three to Washington, Georgia, through a Dr. Habersham. Barton noted "this letter enclosed 25 dollars."[728] Other pupils had to be importuned for unpaid fees, after they took up practice. J. Flitt of Charleston, South Carolina, left without a degree, and Barton reminded him on 17 July 1813 of his unpaid obligation. On 22 February 1808, Edward Fox, secretary for the trustees of the university, had informed Barton that 230 "young gentlemen" had paid their fees, but "including three for whom you are to pay." Professor Barton refused admission to Stephen Neblett, Jr., by letter of 1 December 1814 because he had forged a ticket of admission to class.[729] Even after they were no longer in the university, there were those who attempted to borrow money from their old preceptor. Such a one was Patrick Kerr Rogers, M.D., 1802, who had come to the medical school from Ireland. He requested a loan of $100 in 1809, and two years later he asked for another twenty dollars. Whether he received the first loan, we do not know, but on the last request Barton scribbled "N.B. I sent no money."

Years later reminiscing in his *Autobiography*, Charles Caldwell left a testimony of his debt to Barton over a half century earlier:

The funds which I had brought with me to Philadelphia were already exhausted; and my remittance from the South had not yet arrived. This statement I made to Doctor Barton, when I called on him to enter his class on botany, and added, 'I shall not, I fear, be prepared to pay you for your ticket in less than from three to four weeks—and I am very unwilling to miss any part of your lectures.' The doctor's reply was prompt and courteous, 'That is a matter of no moment, except to yourself. I know what it is for a young man to want funds, when far from home; for I have myself very keenly felt the evil. Here is my ticket, sir, pay for it when convenient.'[730]

Favors were requested. Richards and Warren, two members of the American Board of Commissioners for Foreign Missions, the American descendent of the Society for the Propagation of the Gospel, in which Barton's father had been active, received the opportunity of attending Barton's lectures free at the request of Robert Ralston of 241 Chestnut Street.

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727 Barton papers, APS. John C. Van Horne, who was then an editor of the Benjamin Latrobe Papers, kindly searched, but was unable to identify "Mr. Bossman," who did not succeed in winning a medical degree. (Letter 31 Oct. 1979).

728 Barton papers, APS.

729 Barton papers, APS.

730 Caldwell, *Autobiography*, 159.

Ralston acknowledged the favor 12 October 1813. Nathan Smith, M.D. Harvard, of Hanover, New Hampshire, who had probably known Barton when both were in Edinburgh, and who had sent home books and apparatus for use in his classes at Dartmouth, introduced his colleague Dr. Cyrus Perkins, Professor of Anatomy at the University. "I presented Dr. Perkins with a ticket for lectures in materia medica, Thurs. Dec. 27, 1810" noted Barton on Smith's letter of request.[731]

Answering enquiries about the curriculum, Barton in 1809 and 1812 wrote that pupils were required to enroll in at least one course offered by each medical professor, the professor of midwifery excepted, and each must spend a residence of two winters.[732] "There shall be two Terms for graduating in this University, the one in April, the other in September in every year. Tickets."[733] Rush had proposed to the trustees of the university that three years instead of two would give the students a greater grasp of medical problems; that midwifery was especially important in America, since most doctors would be called upon for that service. As to the extra years' lessening the number of students, Rush felt there were already too many doctors practicing, especially in the cities, and a number were poorly qualified. He stressed the importance of natural philosophy and botany, but clinical experience and laboratory were needed besides just books and lectures.[734] On 13 February 1813 Rush recorded in his diary that the:

> *Medical faculty met to determine whether students should attend 3 years and attend Dr. James* [midwifery] *and Dr. Patterson's* [mathematics] *lectures. Dr. Barton objected to all 3 propositions because it would lessen the number of students. Dr. Physick said not: philosophy could not be understood without mathematics. Dr. Dorsey said some candidates had been rejected who had attended four years in the University, and Dr. Coxe threatened to lecture on hospital days hereafter.*[735]

That Barton, who tried so particularly for accuracy of portrayal in the illustrations for his works, or for gathering all the facts he could for projected papers, should not approve the extension of the medical program for another year to make more proficient physicians seems a bit out of character. Were his own financial pressures especially severe then? Edinburgh required four years of preparation, and more than the four months each year were required by the University of Pennsylvania medical school. His prediction that extending the years would cut down on the number of pupils held true, although the War of 1812 undoubtedly was an influence. When William Darlington[736] obtained his degree in 1804 under Barton, there were fifteen medical pupils, four of them Rush's. The number rose to sixty in 1808, and peaked in 1812 at seventy-one, and in 1815 declined to forty-five.[737] By then Rush had died, and Barton was in Europe.

"I have attempted, in my lectures, to make some improvements upon the arrangement of Dr. Cullen; and, if I live, I hope to publish, in a few months, my strictures on the late arrangement of the ingenious Dr. Darwin."[738] The latter hope Barton did not accomplish, but

731 N. Smith to Barton, 13 Dec. 1810. Barton papers, APS.

732 To G. Williamson, Baltimore, 25 July 1809; Pryor Quarles of Richmond, Virginia, 2 April 1812; and Thomas Keegan, M.D., October 1812. Barton papers, APS.

733 Barton papers, APS.

734 Butterfield, *Rush,* passim.

735 Corner, *Rush,* 301.

736 Butterfield, *Rush,* 884.

737 *Alumni.*

738 *Collections,* 6.

his lectures were to Americanize Cullen and introduce newer ideas. He was to "put materia medica on a broad scientific basis."[739]

At the close in 1810 of his fourteenth course of lectures in materia medica Barton confided, "dictated by my feelings and my duty":

> *I am not insensible that the course has been in some respects imperfect. That upon the whole it has been the most complete. It has been more extensive than any that I have heard in any of the universities of Europe: with this advantage that it has had a constant reference to the productions & science of this country. But I turn from myself to you. Be assured that I shall ever retain a grateful recollection of your attention to my lectures; in a sweet recollection of the hours which I have passed with you in publick with you all; in private with many of you, in my efforts, not always feeble, I hope, to extend the empire of knowledge in our country.*[740]

During Barton's time medical theses or inaugural dissertations in the European tradition had been adopted by the medical school, although they were almost all written in English rather than in Latin, due to the influence of practical Dr. William Smith and Franklin. Dissertations came off Philadelphia presses by local printers as pamphlets, generally of about thirty-six pages in plain gray dust wrappers in press runs of fifty copies. Graduates gave copies to classmates, preceptors, sponsors, and relatives. Barton was recipient of many, which, gathered over the years, are today bound as a volume at the American Philosophical Society Library. Copies of most theses are preserved in the University of Pennsylvania Library. Barton's pupils in their theses usually included a "natural history" section before they gave attention to whatever chemical analysis, experiment, or account of application or prescription they made. Often they included quotations from older literature that are easily identified as having come from books in Barton's library because of the title's rarity or its uniqueness in American collections of that day.[741]

"Nothing is good or bad, but my comparison." Thomas Fuller's epigram is germane for these dissertations of a bygone age. A contemporary opinion: Thomas Horsfield's thesis on his experiments with *Sumach*[742] was noticed by Thomas Latham Mitchill in *Medical Repository*:

> *The botanical and chemical knowledge displayed in this performance, shews the author to have been a student of no ordinary rank. The botanical descriptions indicate a familiarity with the plants he describes. The chemical experiments bespeak correctness in contrivance and neatness in execution. Essays like the one before us, not only redound to the reputation of the writer, but the increase of knowledge.*[743]

Although Dr. Samuel Gross[744] considered these "the bug-bear of the student and the nuisance of the professor," Richard Stone as late as 1894 wrote of the works of Barton's pupils:

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739 Corner, *Two centuries*, 45.

740 Manuscript, "Medical Address to Medical Graduates," 1810; Barton papers, APS.

741 See Appendix II, Roster of Barton's Medical Pupils for topics and dates. For books in Barton's library, see Ewan, "Barton's Library."

742 *An Experimental Dissertation of the Rhus vernix...common Sumach* (Philadelphia, 1798).

743 *Med. Repos.* 2 (1798): 195.

744 Samuel David Gross (1805–1884) surgeon, teacher, and medical author, was born on a farm near Easton, Pennsylvania, and earned his M.D. at Jefferson Medical College, Philadelphia. On finding his income from his Philadelphia practice inadequate and little or no royalties from his several medical texts, he opened a practice in

> *Nor are these essays jejune, for under the conducting hand of the master, they took the form of experimental and practical utility, and the present generation is under obligation for valuable researches, in the field of home productions, to many aspirants for medical honors. Under his training skillful botanists were formed, whose contributions have been creditable to their native country.*[745]

Stone was thinking, for example, of Baldwin, Bigelow, Darlington, Drake, and Horsfield.

A component of the thesis was the dedication designed as an acknowledgement of the courtesies of the preceptor, gratitude to a parent, or friendships back in the home town, the prose generally fullsome and flattering. Barton's nephew, W. P. C. Barton, remarked on the "too frequently prostituted page of dedication." Some dedications, however, reveal traits of personality, associations, or events expressed in sincere felicitious phrase. John Floyd dedicated his thesis on *Magnolia* (1806) to a Dr. Ferguson, Barton, Rush, and Woodhouse: "Your friendship is not the offspring of formal letters...If this production had been the effort of a Darwin's genius, not mine, it could not have added one single ornament to your literary crest." The folding frontispiece to the thesis had been delineated by Turpin and provided by Barton (p. 18). Floyd gave a synopsis of the species and made a number of references to Barton, one, "Professor Barton with his usual accuracy and candor" (p. 32).

A fine example of the extreme care taken to impress the professors was that of Samuel Forman Conover, who wrote for his dedication to Rush, Wistar, and Barton in his *Inaugural Dissertation on Sleep and Dreams, their Effects on the Faculties of the Mind, and the Causes of Dreams:*

> *MEN,*
> *Who have approved themselves friends to the Science of Medicine*
> *Under whose fostering hands I have been nurtured in the legitimate principles of the respective branches of medical knowledge,*
> *And*
> *Whose humanity, liberality, and great ability to relieve the distressed, and to smooth the avenues to death, render them not only respectable in their professions, but also useful and worthy members of society,*
> *This Dissertation is*
> *With all due respect and gratitude,*
> *Inscribed,*
> *By their much indebted friend,*
> *and devoted servant, and pupil,*
> *The Author.*[746]

Conover also dedicated his thesis to The Hon. Elias Boudinot, representative from New Jersey to The Congress of the United States. He acknowledged Barton's suggestion on the "sleep of plants" and hibernation of animals, and Rush's "Inquiry into the influence of Physical causes upon the Moral Faculty," besides citing references to Locke, Cullen, Brown,

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Easton, becoming professor of pathological anatomy in the Cincinnati Medical School when it was opened by Daniel Drake in 1835. In 1840 he moved to Louisville, then to New York City, but not liking that city, he moved back to Louisville. In 1856 he returned to Jefferson Medical College. He won many honors here and abroad, but the one most treasured was an LL.D. given him on his deathbed from the University of Pennsylvania. The book that concerns us most is his *Lives*. See J. C. DaCosta in *DAB*.

745 Stone, *American Physicians*, 31.

746 23 June 1791. University of Pennsylvania Rare Book Room. Printed by T. Lang (1791), 25 pp.

and others. His understanding of sleep would hardly meet modern standards, but on inhibitors of sleep his knowledge dates from Ecclesiastes and still is pertinent.

Barton's "zeal [was] in exciting a spirit of useful enquiry," wrote William Baldwin in 1807. "To his polite and friendly instruction I owed that taste for the study of nature from which I anticipate the most rational and lasting pleasures of my life. It is his happy attribute to fascinate his pupils with the sciences he so ably teaches."[747] "If in the course of my life," wrote Patrick Kerr Rogers in 1802, "I may enjoy any happiness from my attachment to the science of medicine, it must be acknowledged, as, in an eminent degree, the result of your example, instruction and dignity. Indeed I cannot help regarding that day, as truly auspicious, on which I became your pupil." John Hoskins in 1804 called Barton a "friend of Humanity, the advocate for virtue, the favorite votary of science, and accomplished gentleman." Austin Brockenbrough in 1804 spoke of "great veneration in which I hold your talents and your private worth." One of the more distinguished graduates was John Richardson Young. His thesis was dedicated to his father, Samuel Young, M.D., and to Barton, "a gentleman not less distinguished by eminent skill in his profession than by his zeal to promote every branch of useful knowledge." Then there was Nathaniel Chapman, who had attended Barton's lectures while a pupil of Rush. In 1810 he published an American version of John Burns's *Principles of Midwifery*, dedicating the work to Barton, noting their years together on the faculty in "warm and active friendship." His parting thought acknowledged "that whatever I may publish will receive from you no other criticism than what is dictated by candour, justice, and discernment." Rush was riled, referring to the dedication as "pompous" and noting that Chapman had omitted reference to the work of loyal Dewees, who had been the first lecturer on midwifery in America.[748] Rush was feeling the bitterness of desertion of these two once prized pupils, Chapman and Barton, along with most of the other Philadelphia physicians after the yellow fever epidemics of 1793, '94, and '97.

That Barton would carry out experiments on himself certainly influenced his students. Experiment, an essential, accepted feature of physiological studies in pharmaceutical problems, was a long tradition among leading physicians. Of the effects of mountain laurel (*Kalmia latifolia*) on his pulse rate and general well-being, Barton left a memorandum of his reactions dated 27 January 1800:

> *At 12:22 PM took 10 drops Kalmia tincture in a little water; some same 4:19 PM; took 30 drops in water & sugar. I am not certain that either of these doses produced any manifest effect upon me. From the first dose I thought I experienced in a small time, a kind of cloudiness of my mind & dimness of sight. I think the little dose increased the frequency of my pulse, the heat of my system, induced thirst, & disposed me to sleep. Perhaps one or two stools which I had after taking them were produced by them.* [He probably suggested to his pupil, George Thomas, that he carry the subject further for his thesis.[749]]

Subjects chosen for theses by Barton's pupils reflect diseases prevalent in this period. Charles Cocke investigated age-old rheumatism and gout; John Archer, Samuel Boykin, Henry Gray, and Daniel Oliver took up catarrh as topics. James Tongue wrote on *Lues venera*, syphilis. Campbell Chambers and Cosmo Stevenson were the only two to consider gonorrhea.

Chemico-botanical subjects dominated as the choice, and pupils experimented upon themselves, friends, and animals, especially on dogs and rabbits. They worked with *Aralia* (Figure 49), bearberry, benzoin, bloodroot, camphor, catalpa, China-berry tree, chokecherry,

747 In his M.D. thesis 1807; see Appendix II, Roster of Barton's Medical Pupils.

748 Butterfield, *Rush*, 1039–1040.

749 Botany Notes no. 1, Barton papers, APS. Our Appendix II for George Thomas.

dogwoods, foxglove; on hops, Indian physic, Jimsonweed, juniper, *Magnolia* (2 theses), Mountain laurel (2 theses), persimmon, Indian pinkroot, pokeweed, sassafras, Senega root, sumac, and tulip tree.

When William Downey investigated *Sanguinaria canadensis*, bloodroot or red puccoon, William Bartram allowed himself to be used as a guinea pig:

> *Experiment VIII. To my friend Mr. Bartram, four hours after taking breakfast, I gave eight grains of the gummous matter* [of the root], *his pulse beating seventy-eight strokes in a minute. In 15 minutes a slight nausea came on with a burning at his stomach; forty, he complained of a head-ache, the nausea at intervals much more violent; 60, he was vomited twice, the motions were pretty strong.*

Bartram supplied the frontispiece for the thesis and the information on the use of the root tincture for intermittent fever as he had found it on his travels to the South.[750]

John Floyd made nineteen experiments using the fresh bark of the two magnolias he tested. Bryerly carried out nine chemical experiments on hops, and twelve on its role in the "human system." John R. Young experimented with bullfrogs in his study of digestion and nutrition in 1803. An anonymous undated manuscript of six folios addressed to Barton describes ten experiments using arsenic on different animals.[751] It may well have come from Young. He may have been encouraged by Edward Stevens (ca. 1755–1834, M.D. Edinburgh 1777), who was active in Philadelphia 1793–1794 and 1801–1804. Stevens was the first to isolate and determine the nature of gastric juice.[752] In his study of excitability and suspended animation, Samuel Jackson experimented with eight cats and their responses to oxygen.

Commencement for the Medical School was preceded by a system of "quizzing" that represented preparatory enquiries for the final examination in the "Green Box." C. W. Short recalled that "in the University of Pennsylvania, and perhaps other Schools of Medicine, Candidates for the Degree were formerly enclosed in a screen covered with Green Baize, whilst undergoing this final examination."[753] The fee in 1803 was seven dollars.[754] Until 1814 it was customary for the pupil to have his thesis published, and Short was one of the first not to follow the custom.

It was not always easy to meet the costs of publishing the thesis, especially for pupils from rural areas. Robert Mayo wrote from Richmond, Virginia, 22 December 1808 to Barton:

> *Dear Sir,*
>
> *I take the liberty of enclosing you fifty dollars for Mr. Town, being a balance due him for printing my Dissertation. I have thought it proper to let the money pass through your hands, as I was recommended to Mr. Town by you, and having unavoidably disappointed him for some time, suspect that he may have apprised you of it. I hope you and he will acquit me of any foul motive for withholding payment till now. Money scarcely circulates with us.—Shall I hear from you shortly on the subject of the last letter?*
>
> *Mr. Town has my note for the above sum? Please to excuse the trouble I give you, and esteem me your sincere friend & obt. St. Robert Mayo*[755]

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750 See our Appendix II, Roster of Barton's Medical Pupils, for Downey's thesis.

751 Barton papers, APS.

752 Stacey B. Day on Stevens in *DSB* suggested Stevens's influence. Stevens also spent years at Columbia College (present Columbia University) and in the Caribbean, especially at St. Croix.

753 Short's Introductory Address at the Medical Institute of Louisville, 3 Nov. 1845, p. 10. The Institute adopted the same measure: and see Corner, *Two Centuries*, 62.

754 "Resolution of the Medical Professors, 9 Feb. 1803," Barton papers, APS.

755 Barton papers, APS.

It must have been particularly embarrassing to the young man not to meet his obligations since he had written a flattering dedication in his thesis:

> *...the Zeal with which you communicate instructions to your pupils, and encourage them to aspire to excellence in the cultivation of natural science, jointly with their chosen profession,—the unabating assiduity with which you encourage the tyro in science, to expect the happy reward of perseverance,—entitle you, beyond the possibility of a rival, to the thanks of your country, and the gratitude of your pupils...That health may long preserve you for your family and country, is the fervent invocation of your friend, the Author.*[756]

Do we detect Professor Barton's influence on one outstanding pupil, Jacob Bigelow, who, forty-four years after attending his lectures wrote: "That medicine is the art of curing diseases is a false definition [rather] medicine is the art of understanding diseases, and of curing or relieving them when possible"? Bigelow again, "There are some patients, it is true, who like to be bled, blistered and physicked...you should not make your patient worse before they can be better...Mankind finds that they and their families can get well without the lancet, the vomit, and the blister, indiscriminately applied."[757] Had he remembered Barton's statement, "I certainly do not repose implicit confidence in the half of what is said concerning the powers of medicine."[758]

Attendance in Barton's classes had peaked by the year 1810. He wrote Lettsom 17 January 1810 that his January classes numbered "near 300 students." We have no surviving roll book, but without doubt his classes were attracting pupils as Rush certainly must have noticed. "With my practice, &c., I have little leisure to write to you."[759]

Barton's pupils under his stimulus and example, at least in some part left their marks upon the medical world, for all present accomplishment is rooted in the success, or the knowledge of failures, of works in the past. Their primitive scientific experiments contributed their bit though they differed so widely from methods that have been made possible by modern technical knowledge from the world of physics, chemistry, and engineering. Some were studying the possibilities of cures through the native plants of the region, just as plant explorers even today are searching for new sources of cures.

"The Late Disturbances"

Barton was concerned, with other members of the faculty, with student unrest. He kept a rough "exact" copy of a letter he wrote to a current student, A. Barton, from another branch of the family, the letter to be delivered by Dr. Charles Morris. His original was written on both sides of a certificate of membership, unused, of the American Linnaean Society:

> *17 March 1811*
> *Dear Sir:*
> *The late disturbances in the University have given the Professors much uneasiness. We are about making an application to the Trustees, to permit us with a set of rules, partly intended to prevent similar irregularities. In this application, we shall be obliged to hint at the disturbances alluded to; though I am in hopes no names will be mentioned. I learn, from various*

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756 See our Appendix II, Roster of Barton's Medical Pupils, for Robert Mayo.

757 Bigelow, *Disease*, 64, and 128-129.

758 Preface, Barton, *Collections*.

759 The letter, probably hand delivered by Frederick Hall, who was reciprocating for letters of introduction by Barton. Gilbert Collection, CPSP.

sources, that you have been one of the prominent characters concerned in the disputes. I do not mean by this observation that you have been particularly to blame in any thing that has happened: for really I have not found time, to or possessed disposition to institute an extensive inquiry into the merits of the various disputes which have excited so much attention in the school this winter. The respect, however, which I bear to you, from the accounts which I have received from different quarters, of your good sense and character, have induced me to direct a few lines to you, in hopes, that you will pay some attention to my advice; the advice of a preceptor and a friend.

As you, probably, contemplate returning to the University to complete your medical education, and to receive the honours of the institution, I advise you, without wishing to hurt your feelings; or without expecting you to do any thing that may be in the fullest manner incompatible with the dignified conduct of a gentleman, to direct a letter to the Professors, through me, or in any other manner you may deem proper, assuring them of your regret at the disturbances that have occured; and of your determination to take no part in similar disputes, in your next visit to Philadelphia. Such a letter will, I am confident, be of essential Service to you: it will endear you to the Professors; and will never have the smallest tendency, except with the illiterate and weak, to diminish your respectability, as a physician, nor as a man.—I beg you, my dear Sir, to take this matter into serious consideration; receive my advice as that of a friend to the medical school, to the people of Virginia; and to you individually Permit me to assure you, upon my honour, that I write this letter without the advice, or even the knowledge of my colleagues at the University.

I would say more, were it not that my good friend, Dr. Morris, who will hand you this letter, is intimately acquainted with my sentiments in regard to you. I am, Dear Sir, Your sincere friend, and well-wisher, &c. B. S. Barton[760]

A. Barton seems not to have responded to the concerned appeal. We found no record of his having attained a medical degree.

It had been a particularly difficult year. Rush received an answer from James W. Wallace, now of Philadelphia, who had been a student at Edinburgh shortly after Barton was there, about Barton's reason from not completing his degree there. This intensified the animosity between the two professors. Dissention carried over into the student body and influenced relations among other physicians. Dr. William Currie,[761] long at odds with Rush, was convinced that he was a victim of that discord. Barton's senior by twelve years, now practicing in Philadelphia, Currie had served as a surgeon in the War for Independence with his "old friend" Rush, in those early days. From 26 October to 20 December 1797, after that year's epidemic of yellow fever, lexicographer Noah Webster[762] had written twenty-five letters to

760 Barton papers, APS.

761 Dr. William Currie (1754–1808), born in Chester Co., Pennsylvania, after an apprenticeship with Dr. Kearsley (Ruschenberger, *Physicians*, 10, 62, 94) attended medical lectures at the college of Philadelphia, but did not attain a diploma. Elected to the APS on July 20, 1792, he contributed "On the insalubrity of flat and marshy Situations, and Directions for preventing and correcting the effects thereof," *Trans. Amer. Philos. Soc.* 4 (1795): 127. A Fellow of the College of Physicians, from 1804 for many years he served on the Board of Health. Of plain dress, manners, and temperance, he freely gave his services to the "deserving poor." Ruschenberger, *Physicians*, 127–129. He was perhaps the most voluminous writer of the Colonies: Austin (*Imprints*) lists eleven medical titles.

762 Noah Webster (1758–1843) lived for brief periods in Philadelphia. His interest in Currie's beliefs was in line with his *A Brief History of Epidemic and Pestilential Diseases* (Hartford, 1799, 2 vols.). Kemp Malone in *DAB*;

Currie challenging his reputation because of Currie's beliefs about "epidemic and pestilential diseases," his view that yellow fever was contagious and was local in origin, not imported. Most importantly, Webster stressed that differences of opinion among the medical faculty should be made known to the general public. Currie may well have adopted this view, for he surely garnered that his ideas on the fever were not the popular ones among many physicians.

Currie was moved to write Barton, conscious as he was of the conflict raging within the University among the professors and of attempts of the trustees to prevent deep dissentions from spilling over too obviously into the student body. He knew that Rush had never absolved Barton's indiscretion as a student abroad, and he understood Barton's close association with the University administration. He had sent Barton an advance copy of his newly published *A View of the Diseases most Prevalent in the United States of America...* (Philadelphia, 1811) with 240 pages. He was piqued that Barton had failed to introduce the book to his classes. His letter is reproduced in our Chapter VII, Confrontation.

"More Wise Men than Fools"

Barton read widely on the disease that so sorely affected him. "Gouty patients are generally the genuine offspring of jolly Bacchus, and prefer the transient indulgence of their jovial inclinations to the ransom of whole years of torment...until the invariable Queen of tortures, as Lucian calls her, fully convinces them of their errors."[763] Thomas Cogan in *The Haven of Health* (London, 1584) had not been reassuring: "drink wine, and have the gout; drink none, and have the gout." Historically gout has been associated with the great and wealthy, the *Morbus Dominorum*, an influence not only in the lives of persons but of nations. "I have seen the Councils of a great countrie grown bold or timorous, and the pulse of Government beat high or low, according to the fits of Gout or ill health of the Governors," wrote Sir William Temple, statesman, in 1681. "This disease destroys more rich than poor persons, and more wise men than fools," declared Dr. Thomas Sydenham, "which seem to demonstrate the justice and strict impartiality of Providence...that no man shall enjoy unmixed happiness or misery, but experience both." Sydenham's masterpiece, *Tractatus de Podagra et Hydrope* (London, 1683), was followed by accounts of George Cheyne,[764] and by William Cadogan (London, 1771). Cadogan's *A Dissertation on the Gout* was reissued eight times in one year. His cure was moderation in exercise and drinking, which Barton practiced, without prescription, to little avail.

Ferdinand Warner (1703–1768), theologian, wrote *A full and plain Account of the Gout...*, ed. 2 (London, 1768). Among his medical notes Barton included what he probably put into his lecture, "It is well known, that Dr. Warner who wrote a book on the gout, in which he recommended opium, died not long after the book appeared." So much for Barton's not prescribing opium for his own affliction, which he called confirmed gout. He wrote in 1806 to one correspondent, "It is no uncommon thing for me to begin to write a letter which I am prevented from finishing by an attack of gout."[765]

The demography of the disease interested him. His good correspondent John Heckewelder had never seen a case among the Indians he knew so well.[766] Virginia countryfolk used the green leaves of *Liriodendron*, and to confirm Barton's belief that "medicine is not yet a Science," he found there on his visit in 1802 two physicians attesting to its value.[767] Dr. Knox

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Webster in *New York Commercial Advertiser*, reprinted with introduction by Benjamin Spector in *Bull. Hist. Med., Suppl.* 9 (1947), 110 pages.

763 William Cullen, *First Lines of the Practice of Physic...with practical and explanatory notes by John Rotheram, M.D.* (Philadelphia, 1792), explanatory notes to 554. Though this quotation is not included in Copeman, *Gout* (1964), his highly readable history is comprehensive.

764 *An Essay on the True Nature and Due Method of Treating the Gout* (London, 1720, 1724).

765 Barton papers, APS.

766 John Heckewelder, Bethlehem, 20 September 1795. Barton papers, APS.

767 *PMPJ* 1 (1804) Pt. I: 83–85, and Barton's Commonplace Journal, HSP.

used several layers of fresh or dried leaves laid on the inflamed foot suffering from gout. They "give great relief," although "there is a profuse perspiring and may even draw a blister." Thomas Sewell took notes in November 1803:

> *Bitters have been recommended in the gout. Dr. B*[arton] *believes they do good by stimulating and not by correcting the atony of the stomach as Cullen supposes...* [After avoiding] *gout for years by stimulants* [a patient] *fell a victim to apoplexy. Some later writers moreover recommended the use of bitters and attribute their bad effects to an injudicious use of them. The gout is very irregular in this country. Tonics are seldom necessary to relieve it. Bark* [quinine] *is particularly improper. Bitters are useful in the stone and gravel also.*[768]

While Barton was writing his *Elements of Botany* on 11 June 1802, he suffered an attack. This reminded him of Linnaeus, and so he commented on pages xii and 59: "With respect to the remarkable effects of the fruit of the Strawberry in curing the gout of Linnaeus, how much cause have I to wish, while I write this paragraph, that this fine fruit would afford only a portion of similar relief to others afflicted with the same hydra-disease."[769] On 10 October 1809, Barton recorded his own case history. "Tuesday. This evening my pulse evidently intermits: and every now and then I feel an uneasy sensation in my head, as if there were an interruption to the movement of blood in it. Of late I have had a great deal of palpitation which I cannot but consider as a gouty affection for it has left me (not infrequently) when a pain or throbbing in the foot has come on."[770] From an early age this wretched disease, along with "hydrocoele," had plagued this intelligent and ambitious man, turning him often into a short-tempered, frustrated, and seemingly ungenerous person. Other members of the family were also affected: his brothers William and Richard, his son, and his nephew W. P. C. Barton, but none quite so early or so severely.

The "powerful and to most persons an agreeable smell" of the newly opened flowers of Sweetbay (*Magnolia virginiana*) seemed to help some persons suffering "the pain of inflammatory gouts," but the "nauseous odour" of *M. acuminata* and *M. tripetala* "made Prof. Barton sick at stomach," according to pupil John Floyd in his dissertation *Medical Properties...* (1806). After a particularly severe siege, Barton wrote himself a memo: "December 14, 1801. Dr. Kuhn informed me that he had certainly found advantage from the use of Columbo[771] in such cases of gout as mine. He mentioned that Dr. Heberden[772] was fond of using it in this disease. He says he also found the preparations of steel filings very useful. He recommended to me to make a trial of the volatile tincture of G. guaiacum [*Guaiacum officinale*, lignum vitae] from the pills of this gum, he says, he has found little or no benefit."[773]

John Casey of Augusta, Georgia, who had attended Barton's lectures in 1801 and 1803–1804, remembered "the severe visitations of gout which had harrassed" his professor. From his practice he reported on 1 September 1813 cases for which he had used *Gossypium*. "In two young gentlemen laboring under severe gout [cotton batting] afforded much relief that in a

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768 LC, Manuscript.

769 Linnaeus had "such a sharp attack of gout that [he] doubted whether [he] should survive it" while writing his *Philosophia Botanica* (Stockholm, 1751) in 1750. His young protégé, Peter Loefling, took dictation from him, and Linnaeus was able to complete the book. Hosack terminated his spring class by a strawberry festival, telling his students "the fragaria is a most appropriate aliment, Linnaeus cured his gout..." (Robbins, *Hosack*, 72.)

770 Barton papers, Misc. sci. notes #2, APS.

771 *Jateorhiza palmata* (Lam.) Miers, Colombo, imported from the Far East.

772 William Heberden (1710–1801), M.D. Cambridge 1739; lecturer in materia medica in 1745; moved to London in 1748, FLS 1749; author of "De nodis digitorum" in *Commentarii de Morborum Historia et Curatione* (London, 1802), 130. Garrison, *Hist. Med.*, 358–359, portr. and passim; Desmond, *Dictionary*; *DNB*; mentioned frequently in Copeman, *Gout*.

773 Barton papers, Medical notes, misc. no. 4, APS.

couple of days from being in excruciating agony they could walk out in boots." Time and warmth were surely the relief.[774]

Was Barton watching for an American goatweed? The Eurasian *Aegopodium podagraria* of Linnaeus was not known on the Pennsylvania scene until Darlington wrote in 1826 of its having been introduced into some gardens in Germantown.[775] Englishmen extolled its virtues. As early as 1597 John Gerard told in his popular *Herbal* that "Herbe Gerard with its roots stamped, and laid upon members that are troubled or vexed with the gout, swageth the paine, and taketh away the swelling and inflammation thereof, which occasioned the Germaines to give it the name Podagraria because of its virtues in curing the gout."[776] Barton had *Salix* not far from his doorstep, but it was years later that the relief he might have had from salicylate became known for his affliction; or the benefits of colchicine. Instead he gathered material that he reported in his *Collections*, although the verified information, he regretted, was scant. A decoction or infusion of the common Philadelphia fleabane, *Erigeron philadelphicum*, benefitted some of his patients, but he had not employed it himself. Having characteristically searched the literature, he found Loureiro[777] used "the same plant in Cochinchina." That the southeast Asia plant would be the same is unlikely, although we know how this weed and others were carried far and wide by the Portuguese and other world travellers.[778]

His pupils watched for information, folklore, or experimented on gouty sufferers. George Pfeiffer wrote his thesis on the subject in 1791. John Mitchell cited his preceptor on the value of Kinnickanick in treating a patient, and Benjamin Silliman was conscious of incipient gout from the good eating during his two seasons in Philadelphia! Jacob Bigelow, who had listened to Barton nearly a half century before, included a chapter "on Gout" in his *Nature in Disease* (Boston, 1854). He noted that in confirmed or chronic gout "the patient looks worn, sallow and haggard."

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774 Barton papers, APS.

775 *Flora Cestrica*, ed. 3 (Philadelphia, 1853), 105.

776 *Herbal* (1597), 879; reprinted in Thos. Johnson ed. (1633), 1002.

777 João de Loureiro, *Flora Cochinchinensis* (Lisbon, 1790, 2 vols.), of which Barton owned a copy. Ewan, "Barton's Library."

778 E. D. Merrill considers Loureiro's work in *Chron. Bot.* 10 (1947): 246–247. It contained many inaccuracies.

Chapter VII

Confrontation

Who shall decide when doctors disagree?
—Alexander Pope

Benjamin Rush and the Long-drawn Battle Lines

The 1793 season of yellow fever was approaching. Barton, who was enjoying ever widening contacts with other naturalists of note, had not prospered in his medical practice, partly from the limited time he devoted to it, partly because of the excessive number of physicians in the city, and partly because of his less rewarding association with Rush in the medical school.

Benjamin Rush (1746–1813), whom history early elected the outstanding physician in America's leading city of the time, was an intensely religious man of very strong convictions, self confidence, self righteousness, and many interests. His lasting reputation will surely come from the breadth of his activities, his personality, his well-modulated voice and bedside manner, and the records of grateful students—his class register totaled 2,872,[779] some of whom did not receive the degree and some were recurring visitors. Rush was a signer of the Declaration of Independence, served as a physician in the Revolutionary Army, worked for prison reform and more humane treatment of the mentally ill, pioneering in psychiatric treatment. He helped develop a system of education for a new nation, especially including women. His medical prowess has come under criticism as more of his letters, his Commonplace Book, his "Travels through Life," and records of his colleagues have become available.[780] Could the realization by his sons that disagreements with his professional colleagues over his medical practices; his conflict with the beloved "Father of our Country" over better management and care of the wounded in the army and over hospital improvements; his lawsuits with William Cobbett and with his father-in-law over the Bradford will would all diminish his reputation have been the reason they kept his manuscripts and letters from publication? Were the Rush and Barton families so sensitive over the conflicts between these two eminent Philadelphians that their papers remained hidden away until relatively recently?[781]

When as an army surgeon during the War of Independence Rush had visited the military hospitals under the direction of Dr. Shippen, in whose class he had been a student in 1762 and 1765, he "saw scenes of distress shocking to humanity and disgraceful to a civilized country." He found Washington unconcerned, he and Shippen enjoying their usual comforts, while soldiers were "shivering with cold upon bare floors without a blanket to cover them, calling for fire, for water, for suitable food, and for medicines."[782] He wrote to Washington complaining and requesting the impeachment of Shippen, but the charges were dismissed. Rush then resigned his commission of Physician General, and his enmity toward both Shippen and Washington lasted throughout his life. He did not become one of "Washington's

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779 Richard H. Shryock in *DAB*.
780 See Corner, *Rush*.
781 Corner, *Rush*, Introduction.
782 Butterfield, *Rush*, 1121.

idolaters." Shippen and Rush were to find themselves on opposite sides many times throughout their medical school days.

As one of the problems of a socially conscious young physician, Rush concluded that his 1772 "Adress upon Slavekeeping did me some harm...I now found that a physician's studies and duties were to be limited by the public, and that he was destined to walk in a path as contracted and humble and dependent as a mechanic. The influence of these publications was but transitory upon my business. It continued to increase, so that in the year 1775 it was worth about £900 a year, Pennsylvania currency."[783]

When in 1810 an English visitor to Philadelphia was introduced to Rush, he reported back to William Roscoe, who had worked so devotedly to clear slavery from the British Empire, "that [Rush] possesses the most fascinating suavity of manners, and powers of conversation." Rush had sent his message, "tell Mr. Roscoe that I love him like a brother."[784]

Benjamin Rush, like "Bennie" Barton, had lost a parent in his tender years. His father died when he was five. At eight he was given to the care of a minister, the Rev. Samuel Finley,[785] his uncle, for his early schooling at Nottingham Academy near Rising Sun, then in Pennsylvania. At fifteen years of age, he set off for the College of New Jersey (now Princeton), a Presbyterian institution, for his bachelor's degree, which he obtained in a year—1760. He first contemplated a law degree, to which the president of the college, the Rev. Samuel Davies, agreed, adding that he "believed I should make a better figure at the bar, than in the walks of a hospital." Before Rush had begun an apprenticeship with a lawyer, he visited his old teacher, Rev. Samuel Finley, who also asked him his plans for the future. Finley countered that the law was full of temptations, and advised Rush by no means to think of it, but to study physic. "On what slight circumstances do our destinies in life seem to depend! All my friends objected to my choice," recorded Rush. One of his classmates remonstrating against his choice reminded him of the credit he had received at college as a public speaker. "There were periods in my life," Rush remembered, "in which I regretted the choice I had made...and once, after I was thirty years of age, I made preparations for beginning the study of law, but providence overruled my intentions... I now rejoice that I followed Dr. Finley's advice. I have seen the hand of heaven clearly in it..."[786]

After five years of apprenticeship under Dr. John Redman (1722–1808), with whom Wistar would also study, Rush attended classes at the College of Philadelphia. Taking the advice of Dr. John Morgan, who with Shippen had been a founder of the medical school, Rush sailed on 31 August 1766 for Liverpool on the *Friendship* and the study of medicine at the University of Edinburgh. He had been assured a position to teach chemistry in the college on his return. After a stormy passage, he arrived 31 October.[787] "I have always considered Edng. as my birthplace in the profession of medicine" he wrote back to a friend in Philadelphia.[788] To Dr. Morgan he wrote: "Dr. Cullen, the great, the unrivaled Dr. Cullen, is going on unfolding each day some new secret to us in the animal economy. His lectures on the practice of physic this summer [July 1768] are richly worth my staying for. I think I would not fail of having heard them for ten thousand pounds. Illustrious oracle of human wisdom, live—live forever!"[789]

Rush also came home influenced by Scottish skepticism and republicanism. He reminisced in 1800:

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783 Corner, *Rush*, 83.

784 Henry Roscoe, *The Life of William Roscoe* (London & Edinburgh, 1833) 1: 260.

785 Harris E. Starr in *DAB*.

786 Corner, *Rush*, 36–37.

787 Butterfield, *Rush*, 26–28; Corner, *Rush*, 39–42. On the same ship was Jonathan Potts (1745–1781) who remained at Edinburgh only one year, then returned to take his M.D. degree at the College in 1771. He was also to be active in the Revolution.

788 J. C. Treat in Underwood, *Science* 2: 182.

789 Butterfield, *Rush*, 62.

> *To the activity induced in my faculties, by the evolution of my republican principles by the part I took in the American Revolution, I ascribe in great measure the disorganization of my old principles in medicine. The same republican ferment produced similar commotions and I hope a similar precipitation of the feculencies of error, upon the subjects of education, penal laws and capital punishments, upon each of which I published a number of essays in the American Museum, the Columbian Magazine, and other periodical works. A selection of them has been published in an octavo volume by Samuel Bradford of Philadelphia* [1798].[790]

After touring England, especially the factories for their chemical practices, Rush came back to his professorship of chemistry. He is credited with the first formal introduction of chemistry into colleges in the United States, but, strangely, his teaching, naturally leaning toward materia medica, involved no laboratory experimentation or demonstration. When Dr. Morgan died, Rush succeeded him as Professor of the Theory and Practice of Medicine in 1789. In 1791, when the College of Philadelphia was reorganized, he became Professor of the Institutes of Medicine (physiology), and Chemical Practice. His ideas on medical treatment had jelled by 1795.

About a Rush lecture, John Davis, visiting Philadelphia, sent news to Jeremy Belknap on 14 November 1795:

> *...I borrowed a half hour a few days ago to attend one of Dr. Rush's lectures. It was an essay avowedly phisiological, but partly metaphysical and philosophical on Man. The principles of life and means of its support. It was ingenious and interesting, and delivered in a style and manner peculiarly his own, and which commanded the unremitted attention of a numerous audience. Life says the Doctor may be called a forced state depending on the successive application of Stimuli–these stimuli he enumerated under a division of internal and external. The first were Light, Air, Sound, and Heat, &c–the latter, food, drinks, passions and affections of the mind &c.–It is the theory of the late Dr. Brown, whose book Dr. Rush assures contains much sterling ore with a profusion of Dross. The lecture was interspersed, and I think enriched with many moral and religious sentiments, elegantly and strikingly expressed. After premising the importance of his subject, and exhibiting the most striking and interesting characteristics of man, and suggesting the thorough and intimate view which he should take of him in the course of his Lectures, he closed this introduction with offering that he should attempt an analysis with awe of that nature which had been assumed by the Son of God and entered upon his subject with that reverence which a devout man ought to feel when entering the Temple of his Maker.*[791]

Rush was one of the early members of the American Philosophical Society, becoming a curator in 1770, and holding offices until 1812. He served as vice-president in 1798, 1799, and 1800, when Jefferson was president. Besides an Annual Address in 1774 on "An enquiry into the natural history of medicine among the Indians of North America, with a comparative view of their diseases and remedies with those of civilized nations," and in 1786 "On the influence

790 Corner, *Rush*, 89–90.

791 MHS.

of physical causes on the moral faculty," he delivered a number of papers: on stramonium, the effects of cold, on sleep and dreams, the use of mineral waters, on bilious fevers, tetanus, common sense, old age, on the sugar maple, and on the color of Negroes.[792]

Although Rush had included instruction in natural history in his "Plan for a Federal University" in 1788 and had stressed the importance of a "museum, as also a garden, in which not only all the shrubs, &c., but all the forest trees of the United States shall be cultivated," he did not become a member of Charles Willson Peale's Museum Board of Trustees.[793] In a letter to his medical students in 1789, however, he urged them to endeavor to enlarge the materia medica by exploring the untrodden fields and forests of the United States:

> *Who knows but it may be reserved for America to furnish the world from her productions, with cures from some of those diseases which now elude the power of medicine? Who knows but that, at the foot of the Alleganv mountain there blooms a flower, that is an infallible cure for the epilepsy? Perhaps on the Monongahela, or the Potowmac, there may grow a root that shall supply, by its tonic powers, the invigorating effects of the savage or military life in the cure of consumptions.*[794]

Barton's nephew, W. P. C. Barton, has left a portrait of "our Sydenham" when he was a pupil in Rush's class and at Pennsylvania Hospital in 1808 studying the Practice of Clinical Medicine. Rush was then sixty-three, dressed that day in drab-colored clothes. The nephew remembered his "aquiline, large rounded nose," his small, quick-moving eyes, his full-toned voice, flexible and soothing, and that he was "courteous as a cavalier."[795] "When his hour had elapsed by a few minutes he craved, with his watch in his hand, the favor of 'only one minute more'...then, taking leave with 'Think, young men, read, reflect, and judge for yourselves.'" This motto William Baldwin selected for the title page of his thesis. Rush's voice was full toned, flexible, and soothing in contrast with Barton's, which was higher pitched and less pleasant. Caldwell found Rush a very ordinary public speaker, but one of the best public readers he had ever heard, animated and exciting. "In conversation he was uncommonly eloquent, correct and interesting."[796]

Rush and Barton had in common their intelligence, ambition, patriotism, and their pride in having their American education supplemented with study in Europe. Rush had developed his interest in medicine late, and Barton had chosen medicine because of his interest in all living things, and, excepting the ministry in that day, it was almost the only way to combine natural history study with a profession. Botany then was more closely allied to medicine than it is today. Barton experimented upon himself and encouraged experimentation among his pupils. Rush experimented little after his return from Edinburgh and London, being more the observer. Barton came to trust nature more to cure ills, if let to run their course; Rush dismissed nature. Each was kind and generous in his own way to pupils, Rush more spontaneously, Barton more selectively. Rush was more universally liked by the populous and early by pupils, but in later life pupils, especially from New England, regarded Barton's medical teaching more highly. Barton was handicapped with his bouts of irritation when attacked by gout, which made him seem stingy with his time. Still he won the admiration of those pupils who recognized his particular abilities and intellect.

Rush decisively influenced Barton, was one of the most important men in his life—as a matter of fact, each had an influence, eventually detrimental, on the other and on the associations of their families. The mysterious return of Barton without the expected degree

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792 APS, "Minutes," passim.

793 Butterfield, *Rush*, 492; Sellers, *Peale*, 58.

794 Quoted in A. Berman, *Bull. Hist. Med.* 30 (1956): 8.

795 W. P. C. Barton, quoted in Pepper, "Barton," 404.

796 Caldwell, *Autobiography*, 116; for his association with Rush, see Chapters 3 and 4.

from the medical school in Edinburgh, and Barton's evasiveness as to where he had obtained a degree, if indeed he had, cooled the relationship between the senior professor and the young man whom he had recommended so highly to Edinburgh professors. Barton on his return and on Kuhn's resignation attained his position at the College on his earlier record of achievement, with support and influence from Rush's old adversary, Dr. Shippen, and also through his uncle David Rittenhouse, Rev. White, and Rev. Andrews, the latter three on the college Board. Rush had approved the appointment—who else was qualified? What really sealed the enmity and fed its growth over the years was their disagreement over the treatment of yellow fever patients, the cause of the disease as yet unknown. That his former once-prized pupil, caught in a deception, would now side with Dr. Kuhn in criticism of his practice was more than Rush could bear. They had on occasion consulted each other as when Barton called in Rush in 1790 when a young broker from New York had lost his reason.[797] Their different philosophies of medicine, Rush's stiff religious and moral principles, Barton's competitive nature and ambitions, his deism, all fed the flame of hatred Rush developed toward Barton. A critical time was the summer of 1793, when there was disagreement over Rush's excessive bleeding and medication in his treatment of yellow fever.

Yellow fever in America was first noticed in the British colonies in 1647 when Governor John Winthrop of Massachusetts quarantined a ship returning from the West Indies carrying what was called "Barbados distemper." Nearly 6,000 people died in Barbados that season.[798] The malady was first described in medical detail by a Scot, John Lining, educated presumably in Leiden. At twenty years of age he came to South Carolina about 1728 and practiced in Charleston until about 1754. There had been outbreaks, called "the plague," since 1699, and while Dr. Lining was in Charleston yellow fever occurred in 1732 and 1739, with a lesser epidemic in 1745.[799] It was, however, the 1748 occurrence that he reported to Dr. Robert Whytt in Edinburgh, and on which Whytt published in 1756.[800] Dr. John Morgan had taken Whytt's course in the theory and practice of medicine. During the 1762 outbreak in Philadelphia, Rush, then an apprentice, had kept a "small record" of its progress and noted that "as many as twenty persons had been carried off in a single day."[801]

One of the worst epidemics struck the city of Philadelphia in 1793. Barton wrote Pennant, 11 April 1794, that Lining's paper offered a pretty accurate notion of the nature of the disease. He estimated the casualties in the city amounted to "about five thousand persons," perhaps a high estimate, and that it was confined almost entirely to the city. The fever was, he wrote, "undoubtedly, imported from the West Indies."[802]

Suspected as the source of the problem by some of the physicians, including Kuhn and Barton, were the about one thousand slaves who had revolted in Santo Domingo and sought refuge in the City of Brotherly Love. Among the white refugees from Cap François was Jean Devèze, a military surgeon who, the following year, published in his *Recherches et Observations* that yellow fever was non-contagious. Arguments raged over the source and whether it was or not contagious. Barton, observing several members within a household succumbing, at least for a time thought it contagious. A colony, "Asylum," was opened for French refugees from the West Indies near Wilkes-Barre, Pennsylvania.[803]

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797 Corner, *Rush*, 203.

798 Kevan, "Entomology," 215, and Cloudsley-Thompson, *Insects*, 164.

799 Brunhouse, "Ramsey," 212.

800 Robert Whytt (1714–1766), neurophysiologist, author of pioneer studies of "nervous hypochondriacs," meningitis in children, and the response of the eye to light (Whytt's reflex). See Lawrence, "Early Edinburgh Medicine," 86–94.

801 Butterfield, *Rush*, 646.

802 HSP; microfilm at APS.

803 Jean Devèze, *Researches et Observations sur les Causes et les Effects de la Maladie Épidémique qui a Regné à Philadelphie en 1793* (Philadelphia, 1794). Among the refugees were a Mons. de Montule, an unidentified D. Bayard, and the naval officer Aristide Aubert Dupetit-Thouars (1760–1798), who remained in the United States

Yellow fever was not like typhus, bilious camp fever, or scarlet fever—it was clearly in a class by itself. When by mid-August of 1793 this dangerous fever took the town, there was an exodus from the city. Rush, Duffield, Kuhn, Redman, Currie, Wistar, and Barton remained to care for the ill. A special meeting of the Fellows of the College of Physicians was called by the mayor on Saturday the 24th to advise what steps might possibly be taken during the city's calamity. Of the twenty-six Fellows, sixteen attended, Redman and Barton not among them. Dr. William Currie, one of the founders of the College of Physicians, dissented from Rush, who took his stand that the cause was "putrid exalation" from damaged coffee that had putrefied on Ball's Wharf between Arch and Race Streets. Where had the disease come from? John Fenno, editor of *Gazette of the United States*, accepted Kuhn and Barton's belief that it was imported from the West Indies. Fenno described a privateer that had sailed from Marseilles:

> *This vessel was long out, was a miserable crib of a thing with no accommodations fit for even brutes, & yet had 130 men on board. I have been repeatedly informed that many dead bodies, & many sick were removed from this Ship—the Sick were sent to lodging houses in Water Street where the disorder first appeared and where it swept all before it. Above forty persons died—and more than 100 were sick in Water Street before any alarm took place. The Men of War which arrived here from the West Indies in the course of the Summer, had a great many sick among their crews, at least several of them. One of the earliest victims to the disorder was a young man who dined on board one of the Frigates, at a feast made to celebrate the anniversary of the 10th of August, this man died in 3 or 4 days—and in a short space ten others died in the same house of the same disorder—and from this house the contagion spread in Chestnut Street in such manner that above fifty persons died within a stone's throw of it. Scarcely one of which lay more than five days.*

He also wrote, "Numbers are left to perish in a most wretched manner...the consequences are & have been shocking."[804] Fenno also reported that 2,590 persons died between 1 August and 4 October, according to the gravediggers and sextons. During August there had been ten victims a day, but on 11 October, one hundred eleven died.

Rush wrote to his wife, Julia, safely out of the city at Richard Stockton's near Princeton, that: "...the disease is violent and of short duration. In one case it killed in twelve hours."[805] It had assumed a most alarming appearance, and mocked "the power of medicine."

On 29 August Rush wrote Julia that Dr. Wistar was

> *...a great support...he is an excellent man.* [However, but a month later on 22 September, Rush deplored that]*...all my old medical friends, except Griffiths, have deserted me in my practice. Currie,* [Andrew] *Ross, Barton, and even Wistar and Johnson (of the Dispensary) are disciples of Dr. Kuhn.*[806]

Professor and pupil together though they had been, proud graduates of medicine at Edinburgh, and both well-established physicians of the city, Rush suffered anguish over Wistar's apparent lack of appreciation for his having survived yellow fever under his care. An

until 1797. He was the younger brother of the botanist Louis Marie Aubert Dupetit-Thouars (1758-1831). The French Admiral who commanded *LaVenus* was Abel Aubert-Thouars (1790-1804), of unknown relationship.

804 Gazette of the United States & Evening Advertiser (Sept., 1793), 183.

805 Butterfield, *Rush*, 637.

806 Butterfield, *Rush*, 675.

unsigned memorandum, assuredly in the hand of James Rush, is laid in with his father's papers:

> *Dr. Rush cured Dr. Wistar of Yellow Fever. The obligation of a life saver was too much and Dr. Rush having referred to Dr. Wistar's case as one cured by the free use of calomel, the city then being in arms against the remedy Dr. Wistar could not stand against public opinion and so publicly denied the opinion that he was cured by mercury. In a letter of Dr. Rush to him he closed at this 'Caesar had his Brutus & Rush had his Wistar.' He was a good anatomist but a weak man.*[807]

Rush also suffered from the abandonment of his ideas by one whom he had considered one of his more promising pupils, B. S. Barton, the impecunious youth to whom he had lent money for his Edinburgh sojourn. The bulwark of Rush's determined stand was his "dismissal of the healing power of nature...proud of his potent art, he banished nature from the sickroom altogether."[808] Though he did not consider insects as causal factors in disease, he did acknowledge they might be associated "with the effluvia or miasmata arising from decaying materials" that he believed responsible for disease.

William Thornton wrote to Lettsom from Washington, D.C., 11 December 1793, after a visit to Philadelphia, that he believed more Philadelphians "were carried off by the very copious bleeding, and violent and repeated purges of jalap and calmomel, than would have died if nothing had been done." He continued:

"The city of Philadelphia has exhibited such a spectacle of mortality as I was never before witness to. The scenes were so affecting that I cannot think of describing them. Great disputes have arisen whether the disease was imported, or originated here...I do not imagine the disease was absolutely produced in Philadelphia, because it was known to be in several of the West Indies Islands, previous to its appearance in that city. It might have been imported, as is generally believed..." though Thornton thought the fever was activated by other "effluvia."[809] John Redman Coxe reported to Rush 15 September 1794 after visiting Dr. Lettsom in London that Lettsom "did not appear as if altogether convinced of your mode of treating" yellow fever.[810]

"What is chiefly to be lamented the contrariety of opinion respecting the nature of complaints (different from what we have observed in other instances) there has been attended by a corresponding diversity of practice," wrote William Handy of Charleston, 25 November 1793, to Dr. Lemuel Kollock practicing in Georgia.[811] What Rush told his students is preserved in lecture notes: "the Yellow Fever is of domestic origin invariably. It is a solecism in medical language to say it is of tropical climates and is here imported. Miasma adheres to old walls, clothes &c but not to ground, floors and white washed walls. Persons under local inflammation & pregnant women are not very susceptible of its action."[812] André Michaux had left Philadelphia for his tour of the Ohio country on 15 July, returning to the city 12 December, thus missing the 1793 epidemic. Barton kept a record: "Facts, Notes, &c. for an account of the yellow-fever of Philadelphia, 1793," eleven folios of large foolscap marked "Original," into which he entered case histories, the entries dated 8, 9, 10, 11 November 1793;

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807 Rush papers 29: 127. HSP.

808 Shryock, *Medicine*, 70.

809 Pettigrew, *Lettsom*, 3: 224–225. Jalap is *Ipomoea purga* (Wender.) Hayne (*Exogonium purga* Benth. in Burkill, *Dictionary*, 1: 992). The history of jalap is considered in the *OED*.

810 Rush, papers 27: 26. HSP.

811 Kollock papers 496: 1. Georgia Historical Society.

812 Thomas Russell (?), Rush lecture notes, no. 37, LC Manuscript Division.

29 December; 9, 23 January 1794; 2, 3, 4 February 1794, probably copying the data from a daily record he had kept, and intending it for an unfulfilled publication.[813]

The ill feeling over Rush's treatments of yellow fever, especially in the epidemics of 1793 and 1797, stemmed from the exact cause's being unknown and from Rush's belief that all diseases are due to the irregular action in the arteries causing debility, whether directly from insufficiency of stimulation, or indirectly, from the after-effects of excessive stimulation. To Rush there was really only one kind of fever, so there was only one kind of treatment, which reduced what he termed the excitement of blood vessels. His treatment was low diet, heavy purging with jalap and calomel, and bleeding to the limit of tolerance. George Corner had concluded that "the illogicality of treatment which inevitably produces general debility, to relieve excitement of blood vessels supposed to result in the first place from debility, seems never to have occurred to him."[814] Barton, physician to Dr. Hutchinson who lay ill, refused to treat his patient with mercury and jalap, since he had passed "near thirty stools in three days."[815]

Many of the Philadelphia physicians believed the epidemic had been introduced by the shipload of people arriving from the West Indies and wanted quarantine enforced, whereas Rush believed it was caused by a miasmata resulting from decaying vegetation in marshes and swamps and wanted a clean-up. One of Barton's correspondents agreed that it was from exhalations of stagnant water. Dr. James Greenway detailed his observations on yellow fever for Barton, although he confused it with other fevers—with typhoid and malaria. He begins with a lament on his isolation:

> *Dinwiddie County, Virginia*
> *March 3d—1794*
>
> *Dear Sir*
>
> *Your letter of January 23d came to hand a few Days ago having been in the Post Office, some Time. You mention one enclosed but I did not receive one. The Book also, that you sent, has never come to the Post Office.—I have made Enquiry, but can hear Nothing of it—Your publication on the Yellow Fever I shall be glad to see when it is printed, as I have seen Nothing as yet on the Subject worth reading. I suppose the Volumes of your Society, already published, contain many various Subjects but they have never made their Appearance in this part of the Country; at least I have never met with them.*
>
> *You ask if our Autumnal Fever is ever contagious!—I answer no, never contagious.—The negroes are not so subject to it, or to common Intermittents as white people; nor do they have it so bad; neither do they require more than half the Medicines, that white people do when sick of it. It arises from Effluvia exhaling from Mud; and from Water at rest, although deep, such as Mill Ponds, the same Exhalations are produced: and I took the Infection myself, some Time ago, from the Exhalation of Stagnant Water covered with a Scum; and suffered all the usual Symptoms of the Bilious Remittent common to us in this Climate.—See My letter date May 1793.*
>
> *The Autumnal Fever attacked sooner and with more Violence; last Fall, than it has done in the last 25 Years past; and was more tediously continuing; required more Medicines to cure; the Sick were more liable to relapse, and many still remain in a weak state; the Winter has been too warm, and not sufficiently cold to brace them. A Yellowness of the Skin*

813 Barton papers. "Medical." APS.

814 Corner, *Rush*, 385. Corner summarized the beliefs of Cullen, Brown, and Rush in his "Appendix," 361–366.

815 Powell, *Your Dead*, 79.

more or less, but always in the Eyes takes place in every one attacked with our Fall Fever; and I have now & then seen one very yellow. Some I have seen spurt up Bile from the Stomach without any motion to vomit, but those were such as had lived in Low Places a long Time, or often exposed themselves to the inclemency of the Weather.—In the Autumnal Fever all suffer more or less in the Stomach; a continual nausea, and frequently a Vomitting of yellow or green Bile particularly in the exacerbation of the Fever. A Bilious Diarrhea sometimes attends the Fever towards its remission, and is generally salutary; but in Sickly Places the Bile is secreted in such Quantity that it continually discharges through the Intestines until the patient is emaciated and dies.

A Costiveness is still a more common Symptom, occasioned by a spasmodic Stricture in the Intestines caused by the Heat and acrimony of the bile passing through and out of the Ductus Communis Choledochus in a vitiated State: A Pain and Heat about the Region of the Liver and a Heat and burning (as they themselves frequently express it) in the Stomach are very grievous and common complaints. A Scarlet Eruption of petechiae sometimes appear on the Skin; and another less violent, resembling Whelks or Spots raised above the skin, like those caused by the stinging of nettles; and these come out regularly with the exacerbation of the Fever, and totally vanish in every Remission; and, where paroxysms are alternately worse, these Spots only attend the worst Fit, and do not appear in the milder ones. Patients suffering under this eruption are all costive, and have a vomitting. A continual Hiccup seizes some; hot Air and warm Drinks increase it. An Inflammation now and then falls on the Leg with great pain & redness from the Anckle to the Knee and the Chilliness, Fever & all the Symptoms become more moderate and almost vanish.—The Fever is a double Tertian, the Paroxysms alternately worse, and alternately corresponding to the Period of their Return; To-day it comes at Noon, tomorrow at Night. The Fever never goes quite off, but becomes more moderate, until a chilliness ushers in the next Paroxysm.

The worst Paroxysm is ushered in by the greatest Coldness, and this is followed by a Fever proportionately exasperated in all its Symptoms. The next Paroxysm is milder, and all the symptoms, in degree, less violent—The Greatest Fit is perhaps, attended with Vomitting, the lesser one, perhaps, has neither Chilliness nor Vomitting. This was the Appearance of our Fever last Autumn; but there is one Symptom, I had like to have forgot—The Piles were in a few patients very troublesome & painful; the Haemorhoidal Veins swelled and distended with Blood, brought on Inflammation and excruciating Pain in the rectum, with Costiveness. The Danger was great, because the Rectum closed up with the turgid Vessels, would not admit of Injections; and Laxatives, taken by the Mouth, produced, in their Operation, great pain and an increase of the Fever and Inflammation. I was therefore obliged to imitate Nature, in her operation on the Inflammed leg, before mentioned, & which has never failed of Success.

Wine, Bark, & Opium, were the common Weapons, that this Disease was attacked with; and many died. They increased the Quantity and repeated oftener! This was more fatal still.—

I am an old fashioned Follower of Sydenham; and proceeded on his Plan, and Method of cure. The Consequence of it was that, not a Patient of

mine died; though I attended some, that were very old; even of the age of 60- 70- and one near 80, who all recovered, and are still alive.[816]

Greenway then concluded his letter with several natural history notes, and mention of his having received a letter from Muhlenberg, although he gave no details of its content. Shortly after Barton received this letter, Greenway was elected to the American Philosophical Society at the meeting on 18 April 1794.[817]

Arguments over such topics as the fascinating power of serpents, the causes of skin color, over differing medical systems, especially over the treatment of yellow fever, and profuse bleeding had matured Barton. On 4 April 1794, he expressed his thoughts on credulity in his lecture on the rattlesnake before the American Philosophical Society:

In conducting a series of experiments it is ever a matter of importance that the experimenter should be free from the dominion of prejudice and system. Perhaps, facts are never truly related in all their unadulterated purity except by those, who, intent upon the discovery of truth keep system at a distance, regardless of its claims. The strong democracy of facts should ever exert its wholesome sway.[818]

The summer of 1794 was awaited apprehensively; a milder epidemic of yellow fever was recognized. Dr. Isaac Cathrall, a native Philadelphian who had also stayed in the city during the 1793 outbreak, lost no opportunity to study the disease carefully with autopsies. Barton alerted him on 19 August:

Dear Sir, I am sorry to inform you that I no longer doubt concerning the disease of my two patients, in Spring-Garden. It is yellow-fever, strongly marked. As a farther confirmation of my opinion, I am now to tell you, that the child of these patients is, this afternoon, ill of the same disorder. A vomiting has come on in the father and mother.[819]

Until this spring, Rush and Jeremy Belknap had corresponded from about 1787, but in 1794 communications apparently ended abruptly. Their mutual concerns had been the excessive use of alcohol, especially among the poor, and female education. A rift may have been caused by general criticism of Rush's excessive phlebotomy, criticism that was probably carried in Boston papers from Philadelphia publications. Since Belknap's letter to Barton seems not to have survived, we can only speculate on its content, but we see the great gap and loss of respect that had developed among medical practitioners. Barton wrote to Rush 22 April 1794:

The enclosed letter I have just received from our common friend, Dr. Belknap. I think it my duty to let you see it, I shall transmit to the Historical Society all the pamphlets which have, as yet, appeared on the subject of the late epidemic. I am, with respect,
Sir, Your humble Servant &c. B. S. Barton.
exact copy[820]

816 Barton papers, APS.
817 APS. "Minutes," 220.
818 Barton papers, APS.
819 Barton papers, APS.
820 Barton papers, APS.

Rush reported that September to the Philadelphia Committee of Health that "Dr. Physick, Dr. Barton, and Dr. Dewees (of New Street) have concurred with me in declaring the yellow fever to be in town. Dr. Barton assures me that he has seen one case in which it was contagious."[821] Most of the physicians of the city, like himself, reported Rush, had adopted mercury, jalap, and the lancet with few deaths resulting, but that the Kuneans [Kulnians] denied the epidemic of that year to be yellow fever. Instead they often recognized "an inflammatory remittent" (malaria?) and where yellowness obtains they called it jaundice. Dr. Kuhn did not bleed his patients. Rush admitted he was bleeding more freely in this than in the last epidemic: he took 144 ounces of blood in six days with twelve bleedings from "a newly arrived Englishman," giving him at the same time 150 grains of calomel and the usual dosages of jalap and gamboge.[822] We are left without the record of whether the patient survived.

Battlelines extended

In the summer of 1797 yellow fever appeared again, and the old conflicts of 1793 and 1794 within the medical profession over its treatment surfaced again. Rush remembered the year in his "Travels through Life." "In the year 1797" he recalled, "yellow fever became again Epidemic... Soon after the fever appeared Dr. Griffitts published, without his name, some plain and sensible directions to the citizens for the treatment of the fever. This publication was ascribed to me in [John] Fenno's [*Gazette of the United States*] and a most virulent invective against me connected with it." Such harassments continued for nearly six weeks, including attacks by William Cobbett in two daily papers, one his *Porcupine's Gazette*. Caricatured as Dr. Sangrado, who was given to excessive bloodletting in the novel *Gil Blas*,[823] Rush suffered what he called "torrents of abuse...against my practice and character, and particularly against my political principles." Rush won a libel suit against Cobbett, who was fined five thousand dollars after what historians have judged an unfair trial. Cobbett, essayist, politician, and agriculturist, "was a bigger and on the whole a better man than might be thought from his first American sojourn."[824] He left the country in 1800 and did not return until after the deaths of Rush and Barton.

Dr. William Currie was, according to Rush, the ringleader of a confederacy of physicians that included, presumably, Kuhn and Barton.[825] Rush was defended by a colleague who signed himself "Medicus" and who maligned Barton. Barton, naturally distraught at the occasion, noised about that he was the instigator of criticism of Griffitts's article, even though he disagreed with the treatment recommended in the article and may even have encouraged its author, wrote to Rush, first at eleven o'clock on Wednesday, 31 September [1797]:

> *Sir*
>
> *I am sorry to inform you, that the piece signed 'Medicus' which appeared in Freneau's paper of last Wednesday is supposed by many respectable persons to be the production of your pen. What the circumstances are which give occasion to this supposition I have inquired, but I think it is unnecessary to mention them. I feel desirous of declaring to my friends, that this indecent attack upon a man who loves and honours the peaceful citizen could not have come from Dr. Rush. Positively, to deny it, without some assurance, from Yourself, that you are innocent of the charge,*

821 Butterfield, *Rush*, 749.

822 Butterfield, *Rush*, 750. Gamboge is a yellow gum derived from *Garcinia morella* used as a pigment and in medicine.

823 Alain-René Lesage, *L'Histoire de Gil Blas de Santillane*... (Paris, 1747). English translation by Edward Moore (London, 1751).

824 Corner, *Rush*, 99.

825 Corner, *Rush*, 99–101.

or without the assistance of some further light upon the subject might subject me to censure: for not to mention another circumstance, it would oblige me to suspect some other man, he too, perhaps a physician, whose innocence I thus might wrong, You will therefore oblige me by informing me, as early as possible, whether you wrote or dictated the paper which whilst it has been the subject of some conversation among my friends &c in the city has given me not a little uneasiness. That uneasiness be assured does not arise from any, even the most distant, idea that the abuse of language of Medicus will injure me; it arises entirely from the disagreeable reflection that I have an enemy who has been so mean as to conceal his name, and whom, fortified by the integrity of a printer, I may possibly never know.

I subscribe myself, your humble and obedient servant, &c.
B. S. Barton
[Sept.] *31st Wednesday morning 11 o'clock*[826]

Rush evidently replied, but the letter has not been located. Neither have the letters that passed between Griffitts and Barton. Barton's answer to Rush was written that same evening. The reference to the "Hessian Fly" may have been to a rumor that the Hessians had introduced the Wheat Fly, whereas Barton knew that there had been records from much before the Hessians' arrival in this country.

Dear Sir,

I have this instant, received your letter. I assure you, sir, that I am sorry that I leaned even for a moment, to the most distant belief that you had written or had been in any degree concerned in the piece signed 'Medicus.' Yet in reviewing the letter which I have written to you, On this subject, I am led to believe that it is ordered in such a style, that you will not accuse me of any thing rash, or even improper, in requesting answer from you. Believe me, my own suspicions were not on you: they looked another way. But the piece alluded to having occasioned more conversation than it really deserved, two different persons were named as its author, Dr. B. Duffield, who cannot forgive me since the college determination, some considerable time since, and you, whom I have not injured, and whom I have long spoken [of] in terms of friendship and full regard. It was principally the style of the piece, signed 'Medicus' which led many persons to suppose it came from you.

I sincerely regret, that among some of our physicians there is so great a quantity of ill nature and so large an appetite for detraction, and calumniation. In the whole of this business I have had, nothing to do: even thinking about the Hessian Fly is now traced to a source very different from the first supposed one which was myself.

I enclose for you the letters which passed between Dr. Griffiths and myself. They will show you on the one hand, how anxious I was, on the first appearance of the 'Extract,' to do away with any suspicion that I could have written it: on the other hand they will show you what were the sentiments of Dr. Griffits when he read my letter. It seemed to produce in his mind full assurance of my innocence. I shall thank you for these two letters after you have read them. I subscribe myself, Dear Sir, Your obedient servant and friend, Wednesday evening 6 o'clock. – BS Barton[827]

826 Rush papers, 27: 6, HSP.
827 Rush papers, 27: 7, HSP.

Rush having cleared himself of innuendoes, Barton then wrote to his next suspect, but that letter has not come to light. The injured recipient (which Morris we dare not venture) replied, without date, and the envelope addressed only "Doctor Barton," and "Present." It reads:

> *Dear Doctor*
> *Tho' I am unconscious of any 'irregularities or obscurities' which can render me 'destable' yet as come from knowing my having been a dispensiary physician have thought proper to wrest the meaning of a few words in your answer to 'a contributor,' as far as to impute to my pen that publication. I feel myself so much hurt by the supposition, that I am anxious to assure you upon my honour that I am not directly nor indirectly concerned in it—The words from which only this supposition can have originated are 'he ought to know & he does know'—When I remember the habits of friendship which have subsisted between us from our first acquaintance, I am anxious that I shou'd still meet you as a friend. & therefore wish you wou'd inform me whether the supposition of a person in Southwark (with whom you once had a dispute, & and with whom I am at present at enmity)*[828] *can have possibly induced you to believe that from me originated an assertion so injurious to yourself, & the institution you now give your medical attendance to—But I can assure you that I know not who is the writer of those pieces as malevolent as I believe them false & that I knew nothing of the first contributor till asked by Col. Anthony Morris who was present attending physician for the southern district*—[signed only] *Morris*[829]

John Rush, eldest son, took up his father's cause and wrote to Dr. Andrew Ross (d. 1823), a founding member of the College of Physicians, whom his father suspected of having published an article in the *United States Gazette* criticizing his father. Ross retaliated by calling young John "an impudent pup."

Dispirited by the "malice" of the "confederacies" against him in Philadelphia, which had "rendered the further exercise" of his profession "impracticable consistent" with his judgment and conscience, Rush applied to Columbia University for a professorship, but was denied, because, he was sure, of his former political activities as a Republican. In November of 1797 he was, however, appointed by his longtime friend, President Adams, as Director of the Mint, despite his political affiliation. The new position would supplement his professional income, which had dwindled since 1793. To a former pupil, Ashton Alexander, he wrote early in 1798, "I find my pupils grateful in proportion to the smallness of their obligations to me. The greatest injuries that I have suffered in the course of my life have been from persons whom I have obliged most."[830] Among these most prominently he considered Benjamin Smith Barton.

The fracas among Philadelphia physicians in the yellow fever epidemic of 1797 was heard as far away as Newport, New Jersey, and Georgia, for Dr. Isaac Senter (1755–1799) reported to Lemuel Kollock in Savannah 2 January 1798:

> *My poor friend Dr. R*[ush]*'s reputation has gone something like the old paper money & I doubt whether it will not, like that ever experience a resurrection—'Too much learning hath made him mad'...I believe Porcupine's* [Corbett's] *chastizing rod has in some measure stop'd the*

828 Unidentified.
829 Barton papers, APS.
830 Butterfield, *Rush*, 796, 797, and Appendix II.

further exuberant effusions of blood in that Disease—The manner to be sure was rather savage, as he chose the Thorns & Thistles to scourge with, instead of the legitimate cat & ninetails...[831]

Senter wrote again 30 October that year: "Dr. Rush and some others in [17]93 attributed the fever to the putrefaction of vegetables but I am confident that a few putrid cabbages or turnips never generated this Plague in any country, nor has Marsh effluvium any thing to do in its generation."[832]

In a milder outbreak Caspar Wistar sought permission of Governor Thomas Mifflin to occupy some rooms in Government House on Ninth Street "on the western margin of the City...during the present calamity...the yellow fever is now in my neighborhood & I have observed in many melancholy instances that it proceeds from house to house, unless the people fly; as I detain my servants in town [I] ought to provide a place of safety for them."[833]

Rush produced *Medical Inquiries and Observations* (Philadelphia, 1794–1798, 5 vols.), which was reviewed in *Medical Repository*.[834] Mitchill suggested that the poison of the rattlesnake had an identity with the causes of yellow fever. He singled our Rush's argument that "summer fruits, improperly used, terror and vexation, were sometimes observed to act as exciting causes." Rush had noted that "Persons of full habits, strangers and negroes were more subject to it," and that it was contagious in a few instances, and was caused by "exhalations from gutters, stagnant ponds."[835]

To Lettsom Rush wrote that Yellow fever was "acknowledged everywhere, (Philadelphia excepted)" to be of North American origin, and that he had collected many new proofs of that assertion and of a defense of bloodletting.[836] One of his patients did not agree. Rush recorded in his "Commonplace Book" under the date 27 July 1796 that the mother of his pupil Dr. James Mease, "told me when dying that among other sins she had to repent of one was too much confidence in my remedies."[837] Rush taught that the body contained twenty five to twenty eight pounds of blood or twelve quarts, though it contains about six. "He must indeed have nearly exsanguinated some of his patients."[838]

Almost everyone associated the fever with stagnant water. Jefferson wrote in a letter to Barton "That the putrefaction of plant matter is capable of inducing the phenomenon of a malignant fever. I can have no hesitation in believing and in support of this doctrine I will mention two facts additional to those which Dr. Rush has related...The late Colonel Knox of Rappahannock, pointed out to me when I visited him in 1802, a beautiful piece of flat ground adjacent to the Beverley branch, on which he had one year a very rich crop of tobacco. But all his prospects of enjoying the crop were destroyed by the overflowing of the waters of the Beverley which inundated the tobacco ground, & did not retire from it for a few days, when a strong sun acting upon the vegetable matter produced its rapid decomposition, and with it occasioned an intolerable stench. In a few days after, a most malignant fever, attended with ulceration of the throat, broke out upon the plantation."[839]

Medical Repository carried the note: "Dr. Davidge, of Baltimore, has lately published a small work on the Yellow Fever; and we are informed that Dr. Porter of that city, designs soon to publish a reply to it. We anticipate much pleasure and improvement from the extensive

831 Kollock papers, 496: 9. Georgia Historical Society.
832 Kollock papers, 496: 15. See *Georgia Hist. Soc. Quart.* 22 (1938): 341.
833 Gilbert Collection, CPSP.
834 *Med. Repos.* 1 (1797–1798): 73–79, 213–217, 343–348.
835 S. D. Gross, *American Medical Biography* (Philadelphia, 1861), 281.
836 Pettigrew, *Lettsom* 3: 194–195.
837 Corner, *Rush*, 236.
838 Binger, *Rush*, 184.
839 Barton papers, APS.

discussions of this important subject, which are now fast spreading through every part of our country."[840]

Dr. Cutbush wrote from Italy on 10 January 1805 that "An Italian physician, at Messina, has nearly completed the translation of all of Dr. Rush's works," Barton publishing the letter in his *Journal*.[841] Ebeling reported that Malagua, Spain, in 1804 had been "greatly deserted, and three thousand persons have fallen a sacrifice to the disease, which even penetrated into the ships in the harbour."[842] The fever reappeared in Philadelphia in August 1805. Dr. Anthony Fothergill wrote to Lettsom that the non-contagious nature of the "malignant fever" was defended by many persons in the city. To escape the epidemic Fothergill and family moved that year to Germantown.[843]

Charles Caldwell's "Essay on the Pestilential or Yellow Fever as it prevailed in Philadelphia in the Year 1805," was reviewed by Mitchill.[844] Caldwell believed that the principal causal agent was the heat of the summer season. Dr. Anthony Fothergill also conjectured that the high temperatures—one day 96 degrees, and open air temperatures of 84–94 degrees—were contributing to its occurrence, but he also noted that the fever was absent some years despite high temperatures. Mitchill concurred with Caldwell in believing that the fever was native to the Philadelphia area. He had once suggested that oxygen and azote (nitrogen) in certain inflammatory proportions might be causal agents.[845] Dr. David Hosack, Mitchill's New York colleague, disagreed. He wrote to Lettsom in London in 1809: "I hope the facts I have assembled will counteract the mischievous doctrines propogated by our friends Rush and the Editors of the Medical Repository, of the non contagiousness of this disease, and its generation in the United States."[846] And so debates and controversies filled letters and journals, no one suspecting at that time that mosquitoes were involved. Two years before his death Rush wrote to Joshua Dixon, at Whitehaven, 5 November 1811: "Our city has escaped the yellow fever for several years past. A belief in its domestic origin is less unpopular than it was in the year 1793. Most of the physicians of our country now admit that opinion."[847]

William Currie, having been one of the physicians opposing Rush's drastic treatment of fevers, had expected Barton's support for the use of his new text in the medical school. He expressed his disappointment in a letter to Barton:

> *Feb. 11, 1811*
> *Dear Sir*
> *Being sensible of the tardy and limited circulation which the generality of publications meet with, whatever may be their merits unless patronized or recommended by men of influence and popularity, and presuming that the diffusion of knowledge of the improvements which I have collected and published in my condensed view of the Diseases which are most prevalent in this Country at different Season of the Year, would contribute to the welfare and service of the Community, I applied to you and to Doctr.*

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840 *Med. Repos.* 1 (1797–1798): 372. John Beale Davidge (1780–1829), b. Annapolis, Maryland, earned his M.A. at St. John's College, apprenticed with Drs. James and William Murray, then studied especially anatomy at Edinburgh, taking his M.D. at Glasgow in 1793. His *A Treatise on the autumnal endemial Epidemick of tropical Climates vulgarly called the Yellow Fever; containing its Origin, Nature and Cure...* (Baltimore, 1798; Austin, *Imprints*, 626) brought criticisms, in answer to his request, from Philadelphia physicians. One paper was signed by Rush, whose methods he opposed. We have not seen these works.

841 *PMPJ* 2 (1805) Pt. I: 193.

842 *PMPJ* 2 (1805) Pt. I: 199.

843 Pettigrew, *Lettsom* 3: 270–271.

844 *Med. Repos.* 2nd Hex. 5 (1850): 177–184.

845 Cited in a letter, Tucker Harris, Charleston, S.C., 25 November 1801, to George Logan, then a pupil of Rush. Barton papers, APS.

846 Pettigrew, *Lettsom*, 3: 215.

847 Pettigrew, *Lettsom*, 3: 390.

Wistar (either of whose influence is sufficient to give Currency to any work you approve of) requested you to mention it to your respective Classes in such terms as in your judgement it might deserve.

It has since been suggested to me by a Gentleman connected with the University in which you are a Professor, that it would be improper for you to introduce to the Notice of the Class, a publication which not only calls in question the infallibility of a Doctrine taught by one of your Colleagues, but has exposed that Doctrine with the pointed finger of Scorn, as it might be the means of reopening the apple of discord which is cultivated in that Institution and Subject you to the displeasure of the Trustees.

With one however, who prefers the Welfare of the Community to the Local interests of a University, in my opinion such considerations should have no weight, as it would be an indirect confession that the reputation and influence of the University, depend upon the implicit faith of the Students in the infallibility of the Professors or their Doctrines, and that like a monopolizing Manufactory of brittle ware more showy than substantial, its reputation can only be supported by keeping out of view such publications as call in question the infallibility of the Doctrines taught in it.

If however you should be of a different opinion you have my unqualified consent to release yourself from your promise, though I shall regret the necessity of it. Please to return the unbound copy of the 'View' which I sent you and accept of the accompanying bound one, in exchange, with the assurance of the unfeigned respect and esteem of Your friend & very hble. Servt.

Wm. Currie[848]

Ewan, "Barton's Library," lists a copy of Currie's gift to Barton, *A Dissertation on the autumnal Remitting Fever* (Philadelphia, 1789), but not his "condensed" *View of the Diseases...*[and the] *most improved Method of treating Them* (Philadelphia, 1811), which runs to 241 pages.[849] It may have escaped his library with other medical books. Currie was piqued that Barton had failed to introduce the book to his classes, but the trustees prevailed, and Barton may by this time have had some sympathy for his former mentor, Benjamin Rush.

Rush had felt a devastating blow when son John in New Orleans in 1807 killed his best friend, Lt. Benjamin Taylor, in a duel. That marked the worsening of an already disturbed mind and led to John's confinement in his father's very seat of compassion, the Pennsylvania Hospital. Young John had been removed from Princeton for not meeting his father's restrictive directions, served in the navy 1796–1804, "returning home evidently under some sort of emotional reaction" to navy life. He entered medical school, earning his degree in 1804, his thesis *An Inaugural Dissertation on the Causes of Sudden Death and the Means of Preventing It* (Philadelphia, 1804), dedicated to his father. That same year he read before the Philadelphia Medical Society and had published *Elements of Life, or the Laws of Vital Matter* (Philadelphia, 1804), which insisted upon the materiality of nature, of the "first cause" of the human mind, and life in general. Part of his argument was based on his father's theory that insanity has a material basis, depending upon malfunction of the cerebral vessels, but materialistic implications in the paper must seriously had offended his father's steadfastly

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848 Barton papers, APS. Barton had published Currie's "Observations," *PMPJ* 2 (1805) Pt. I: 34–49, which followed a letter Currie had received from Dr. Tucker Harris (1747–1821), of Scottish descent, M.D. Edinburgh 1771, and a founder of the Medical Society of South Carolina (Waring, *South Carolina*, 242–243, and passim, portr. p. 300). Harris' letter *PMPJ*, loc. cit. 21–34. Harris had suggested "a peculiar unknown modification of the atmosphere...connected with putrid miasmata." Currie disagreed.

849 Austin, *Imprints*, 608.

religious convictions. John re-entered the navy in 1804, declining a position on the hospital staff, and in 1807 was in command of a gunboat stationed at New Orleans.

This injury to the pride of one who had lectured and published on the education of the young and prided himself on his methods of discipline, by the son from whom he had expected so much and had pressed too hard, was added to the ferment caused by the criticism of his colleagues. Was it a salve to receive a comforting letter from Jefferson, away from Philadelphia turmoil in Monticello, on 22 September 1809? "I am become sensible of a great advantage your profession has over most others, that to the close of your life, you can always be doing good to mankind: whereas a retired politician is like a broken down courser, unfit for the turf, and good for little else...You know what were the times which forced us both from our first loves, the natural sciences."[850]

Rush described the effect of his son's illness to Jefferson on 2 January 1811, "For some time I was in a state unfitted by it for study or business," yet he composed an essay "upon that part of jurisprudence which decided upon the state of mind which should disqualify a man from being a witness in a court of law, making a will, and which should exempt him from punishment for criminal or felonious acts."[851] To John Adams, his closest friend of later years, he confided that "mind and body are moved by the same causes and subject to the same laws." His application of this precept is taken to be the starting point of psychiatry in this country.[852]

In 1812 Rush produced his *Medical Inquiries and Observations upon the Diseases of the Mind* (Philadelphia, 1812), the first book on psychiatry by a native American. "Moral derrangements" wrote Rush, involved not only intellect, but also behavior and emotions. Since 1787, when he had taken charge of the insane at Pennsylvania Hospital, he had tried to understand the operations and functions of the mind.

Rush considered even pregnancy a disease, and for the relief of pain in child-bearing he recommended drawing thirty nine ounces of blood at the onset of labor.[853] In a letter to Barton, Dr. Davidge of Baltimore disagreed. He observed all Nature's plan with delight. If pregnancy were a disease "the sublime order of the universe would be forced...into chaos...As I advance, if I find that I have some matter of etiquette in science to adjust with an ingenious gentleman of Wilmington, Dr. Vaughan, and also with a learned lecturer of Philadelphia...Error in youth is excusable but in teachers should be chastised."[854]

What were Rush's pupils hearing from a popular lecturer in the medical school? Preserved in some surviving notes are, for example, those of Thomas Russell(?), also a pupil of Barton:

> ***Lecture 21:*** *It is difficult to draw the line between the mind of man and brutes (Dr. R. did it miserably indeed). Man the handsomest animal. Then the horse. We have an innate admiration for rotundity. The pleasure of taste and of smell are of but short duration, Louis XIV used to unite a bed of roses, a concert of music and coition. But they were discordent. We can attend to but one thing at once.*
>
> ***Lecture 26:*** *Porter is best malt liquor...Distill'd liquors are bad—not nourishing. They are least hurtful in the form of punch. Aqua pure the best drink in every clime. It seldom fails to insure health and longevity.*

850 Rush papers, AC 7277, HSP.
851 Butterfield, *Rush*, 1074.
852 Butterfield, *Rush*, 1132, n. 6.
853 *Med. Repos.* 6 (1803): 26.
854 *PMPJ* 3 (1808) Pt. I: 61–65.

Lecture 41: Ardent spirits the cause of innumerable curses. It affects the morals, ruins the mind and everything else.[855]

John Austin, M.D., preserved his notes on the Institutes and Practice of Medicine, the first dated 8 November 1809. The following are a few excerpts as the student recorded them:

Animal heat is the secretion of Oxygen from the air. The foetus ova, &c are secreted bodies...the passions Produce Bile particularly anger. A young man under anger who vomited Bile. Cystic bile yields oil soda albumin. phos. carbon, sulphar, muriat of lime. Of Persporation the Perspirable matter may be obtained, by placing the part under a glass vessel. it has been seen escaping by the naked Eye. The salt is neither acid or alkali, it contains no astringency. It emits a certain odour. It is different in different ages, climates, &c. A man who could distinguish a virgin from a married woman by the odour of the perspirable matter. It is greater after full meals, hence the use of eating frequently in weak people. sweat arises from the relaxation of the vessels of perspiration.[856]

In view of Rush's efforts on behalf of the education of women, read Austin's notes on the ideas he gave to the young men.

Lecture 26, 9 December 1809: There is material difference between the minds of men & women. This has been ascribed to education but certainly there is as much difference naturally as in their bodies. The difference is first in the understanding. Less strong & vigorous in women. The immagination less strong. Their memory's greater for words & events but not for Ideas. women have been called almanacs from their great memories. Great retention of words. The Indians trust their traditions to the women. They are superior in taste especially in dress, hence they polish the manners of our sex. Their moral faculties better, the sense of deity more exquisite, more active but more circumscribed. less benevolence but more humanity. Conscience more acute in women. By education exposed to fewer gross vices, more devout, more kindness, humanity & charity. They are the greatest pleasure of middle age the supporters of its extremities viz–youth & old age. They want vivacity which is owing to their education. Women dispair sooner than men. Thus when a patient is very ill they should be rescued from the women. They have quicker perception, but less acute Judgment than men, more fortitude but less courage, more inclined to society. Prone to divulge the secrets of other people, but keep their own. Men on the other hand are prodigal of their own but faithful repositorys of the secrets of others. They will not forgive injuries. The venerial appetite greater. Female delicacy owing to nature, owing to the dishonor of a breach of chastity. When they take to any vice, they are worse than men. vice in women is a morbid action of mind...[857]

Lecture 29 December 1810: Females should marry at 16. males at 20 yrs. You are Eunuchs if you do not marry. No calling in which the desire

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855 LC, Manuscripts.

856 Rudolph Matas Medical Library, Tulane University Health Sciences Center, pages 184–255. Was this John Austin (1770–1837) of Barbados, one time of the British Navy, who practiced in Barbados and Demarara, and died in Philadelphia? (Hough, *Biogr. Notes*, 11).

857 pp. 186–187.

for venery does not exist. Man in every situation desires to propagate his species. The mear [mere] *approach does not diminish it at every season of the year & commonly followed by debility. Excess destroys the constitution. Thence the custom of having but one wife. The amphibious animals enjoy the highest gratification, as the frog tortoise &c.*

Of the cause of Generation male semen full of animalcules, some suppose the female ovum? The male imparts motion to the female which causes animal life. How is the male semen brought in contact with the female ovum? Different opinions some the comixture of male & female semen, others by inverted peristaltic motion, others by sympathy, in which I concur...We are the product of disease The ovaria is the seat of conception. It is compared to the hot bed, the utirus the green bed. Every part of the body contributes to the secretion of semen. Hence the resemblance to their parents, Bastards bear the greatest resemblance to their parents, particularly their father,...[858]

All sick people become selfish, but this disappears with returning health. In old age we become selfish. There we are twice children by selfishness.[859]

From these remarks you see the difference between my opinion & Dr. Browns.[860] *He supposes debility a disease. It is not. He says excitement & excitability are equally diffused. I believe them equal in health but not in disease. All his remedies are to remove debility, mine to remove excitement. Disorders do not belong to disease. Many die of disorder & debility without disease. The history of disease may be compared to a ladder. The first rung Elevated or natural excitement. 2d debility from action or abstraction. 3. Increase excitement. 4th. Depression. 5th. Irritation. 6th. Disease. 7th. Oppression or suffocated excitement. 8. Prostration. 9th. Disorders. 10th. Debility which succeeds disease. My doctrine enables us to meet disease in its forming state. Depression is the next link in the chain of disease, after Debility.*[861] *It appears as if the stomach forgot its old acquaintances. Aliment produces disease by being too long on the stomach. Aliment often produces disease by being cooked in unwholesome vessels. By poisonous animals introduced. A spider by falling into a crock of milk disordered a whole family. Animals that have eaten unwholesome food are bad ailment. 60 students of the Hersey College affected with diarrhaea from eating pidgeons that had been fed on Poke berries. There is an idiosyncrasy in some people which hinders them from eating certain wholesome aliments. Milk in all persons predisposes to* [illeg.] *hora.*

Of the diseases induced by condiments. They are Salt, vinegar, sugar & the Spices. The use of common salt is nearly universal. When taken to excess it induces the scurvy. It destroys the excitability of the stomach. Vinegar produces inflammatory disease either sooner or later. The case of an old man who used it for obesity & now labouring under stomach complaints. It produces gout & dyspepsia. Mustard has produced chronic rheumatism & gastrites. Frederic the Great, was a great glutton But never eat more, as he said, than would 'keep soul & body together.' Sugar the

858 pp. 190–191.

859 p. 214.

860 Rush had once said of John Brown's *Elementa medicinae* (Edinburgh, 1780) that it contains much sterling ore with a profusion of dross. For Brown (1735–1788) see Garrison, *Hist. Med.* 314–315.

861 p. 214.

most agreeable condiment is also productive of disease. an obstinate dyspepsia produced by sugar. Spices act differently & produce different diseases. Cayenne pepper induces swelled testicles.

Of Tea and Coffee.[862] *A revolution in the manners and customs of mankind was produced by the introduction of tea. All the diseases are from taking it too strong. It produces wakefulness in many people. It predisposes the system to all forms of gout. The intemperate use of tea in women is the reason why they are more subject to gout & nervous diseases than our sex. Excesses of eating & the passions of the mind product gout. Indolence has the same effect. Gout in the stomach, bowels & nervous system produced by tea. Vertigo produced by coffee & hence curred by leaving off its use.*

Of disease brought on by drinks. Man stands in need of drinks as well as aliments. of water: diseases & death brought on by it. It produces diseases by its Insensible Qualities.[863]

These then were the beliefs the students learned from Rush in his course "On the Theory and Practice of Medicine."

Heightened feelings of hurt and criticism, one for the other, began the year 1810 for these two antagonists. Letters between Barton and Rush, ten of them, expose the intensity of animosities welling up over the years. Barton recalls the hurt of lack of Rush's understanding on his return from Edinburgh and his continuing unfriendly attitude. A new occasion of ill-feeling arose after the death of Dr. Woodhouse, an early apprentice of Rush whom he now considered "an open and rude infidel, [who] often offended and shocked by his abuse of Christianity."[864] Barton's letter of 1 January 1810 to Rush reads:

Sir,

When we met together in Chestnut Street, this evening, you afforded me an opportunity, which I unfortunately omitted myself of speaking more openly of the differences which have long subsisted between us. Of the causes of those differences,—I mean the original causes,—I wish not, at this time, to say anything. But it is impossible for me to be insensible to your unkind, and unfriendly, and at one time of my life, your cruel dispositions towards me, as manifested in your frequent advice to gentlemen 'not to attend my lectures.' That such has been your advice for several years past I have from the most positive of sources from <u>many</u> gentlemen, some of whom are now in Philadelphia...some...are now punctual attendants...and perhaps not a little disposed to be my friends.—Sir this is conduct of the most hostile kind. As such it has been viewed by a majority of those to whom the advice has been given, and as such, if I do not greatly mistake, it would be viewed by <u>every</u> member of the board of Trustees. I hope that from this time, I shall hear nothing of the same kind...Sir we are both in possession of some reputation, which it is the power of each of us to increase. In age, you are at least two and twenty years in advance of me. We are both bringing up families and it is a pity that they should grow up in hostility—even in civilities to each other. Nothing, I fear, can prevent this but a change in one's conduct and this change must be begun on your part by a more liberal and temperate conduct towards me, in regard to my <u>lectures</u>, at least.

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862 [Black tea is brewed from the leaves of *Camellia sinensis* L., Theaceae, while coffee brews from the berries, primarily from *Caffea arabica* L., Rubiaceae.]

863 p. 255.

864 Corner, *Rush*, 316.

Then Barton introduced his trump, a decidedly unfriendly threat, as he continued:

> *When I tell you that I have in my possession the original commonplace book of the late Dr. James Woodhouse, in which he has recorded, under specific dates, specimens of your hostile conduct towards me, not to say anything of the memorials of your conduct towards others, you will not think that I have acted improperly, certainly not without some degree of reflection in writing this letter to you. I regret that I have ever seen the book to which I refer. But as it came into my hands by a kind of accident, I cannot avoid reading it with great attention, especially as I am employed in preparing for the publick some account of our late Professor of Chemistry.*
>
> *I am Sir, with unaffected wishes for Your prosperity and for the continuance of your Useful Life, Your Colleague and former pupil, B S Barton.*

Barton wrote on the extra sheet used as the envelope addressed to Rush Jan. 1, 1810:

> *The other parts of Dr. Rush's letter will be attended to very fully in a few days.*[865]

Rush replied on 3 January:

> *Sir, I am rarely asked by the young men who call upon me for tickets what lectures they shall attend and when I am I always* [crossed out] *advise them to attend them all. When they answer they cannot attend but four courses I have generally advised them to attend the chemistry before the materia medica, that they cannot understand the application of chemical substances to medicine until they are acquainted with their composition. This is the natural order of the study of medicine. When I am informed their resources will not enable them to attend but two courses I advise them to attend the anatomy & surgery only as being less easily obtained from books than a knowledge of chemistry or materia medica. For this advice I am responsible to no man and I conceive it to be an indecent and unjustifiable act to complain of me for it.*

Rush's advice about which Barton had complained is preserved in a letter from his student James T. Hubard of Buckingham Co., Virginia, to his father. Rush advised him not "to attend Lectures on Practice of Physic and Materia Medica—until next season—and if I should not have an opportunity of attending another Course, he says, I will lose nothing by not attending these Lectures as they are entirely such as Dr. Cullen has delivered in his writings."[866] Rush continued to Barton:

> *I think it probably Dr. Woodhouse has inserted a correct acct of my remarks upon your conduct & character in his Journal. They were communicated to him under the impression not only of your open abuse of me or my practice in the year 1793 but of information I rec'd of your conduct while abroad from several sources, one of which was (now before*

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865 Rush papers, 27: 10, HSP.

866 Wm. D. Joyt, Jr., "A young Virginian prepares to practice medicine, 1796-1800," *Bull. Hist. Med.* 11 (1942): 384.

me) in a letter from your wife's brother the excellent Dr. Pennington when in London relative to the medical society in Edinburgh.

While upon the subject of your attacks upon my moral character I am led to ask you a question. Did you tell Mr. [Constantin François] *Volney as has been asserted you did that you examined the pulses of the same Indians whose pulses I said were less frequent than the pulses of civilized people at the 'same' time that I did & that there was no difference between them? I can produce 3 witnesses to prove that you were not present at those experiments. If you admit this I shall write to Mr. Volney & vindicate myself from the falsehood which he has published in his journal. My delay in demanding an explanation of a curious charge of my veracity has arisen only from my desire to live peaceably with you.*

I have been irritated by your intemperate abuse not only of my professional but of a moral character. I feel very sensibly to our 'both having children' mine who have lost between 30 & 31,000 dollars by the devaluation of my business between the years 1797 and 1807 in consequences of the calumnies & falsehoods propagated or secretly dictated by my medical brethren against me having required of me a denial & refutation of them. This shall be done in due time. The conduct of some of my colleagues in the University will form a material part of the basis of my appeal to the justice of my fellow citizens.

Then Rush thinks of what could have been, had Barton's reputation been unscathed and had he remained a loyal pupil of his former teacher, not taking sides against him in medical controversies:

How different would have been our situation had we set an example of liberal and dignified intercourse with each other to the students of medicine. How much might we have aided each other by an occasional communication of facts and opinion upon the subjects of our respective lectures! We have not only lost much pleasure & improvement and we have dishonoured the University & profession of medicine by our conduct. I would rather much rather bury all that has passed between us in oblivion and pass the few years at most which may remain of my life in peace with you in every measure that is calculated to promote the honor and interest of our university.

With sincere wishes for the restoration of your health & the prosperity & happiness of your family. I am your much injured early friend,

Benjn Rush[867]

Without referring to Rush's summary of what might have been—Barton had been hurt too deeply by Rush's lack of sympathy and understanding of the plight and miscalculations of an inexperienced youth in a far off land, and his family had also felt the consequent financial restraints—he responded on 6 January 1810, saying: "Sir, you expressed a desire to know what I told Mr. Volney on the subject of the pulses of the Indians, whose pulses had been examined by you. On the head I will give you all the satisfaction in my power. I very well recollect to have informed Mr. Volney" that he, Barton, had examined some of the same Indians on the same visit to Philadelphia in 1792 or 1793, some of whom were sick. He told Volney that he had found Indian pulses no different from those of other men "in frequency,

867 Rush papers, 39: 82–83, HSP, a copy.

in fullness, or in force," and quite different from Rush's observation. But he had not told Volney he had examined them at the same time, or same hour or even the same day.

"As Mr. Volney is a man of veracity, as well as of talents, and as he is, I doubt not, quite as cautious and faithful in his statements of facts, as other intelligent travellers," he may have been under that impression in their conversation of 1797, or 1798. He has given Volney many memoranda on Indians, and has showed his manuscripts of his writings, but never anything *written* on pulses. Volney, Barton wrote, does not understand the English language. He himself has long been interested in all aspects of Indian life, health, diseases, plant uses, etc. and has delivered papers at APS meetings, and hopes to publish all, if his life is spared. He has been told that J. R. Smith, Esq., who knows that Barton has long been interested in Indians, once had dinner where Shippen was present. Another guest raised a laugh by saying that he had found Barton highly employed in taking the pulses of *healthy* Indians.

Barton wonders why, if this has bothered Rush so long, he has never mentioned it before in their discussions of the *Tableau du Climat et Sol des États-Unis d'Amérique*... (Paris, 1803). He quotes as golden axiom "that experiment is difficult, and that the least observation and the most studious judgement are often fallacious." Nothing is more common than for two men to differ widely from each other, in their views of the same subject, whether in physics or in morals...and, largely perhaps, from a difference in the nicety and delicacy of the perception, both physical and mental, of different men.

Readers may say "that the subject was a difficult one, a nice one; or that it was a trifling one; or that each of us had a theory to establish, or that the pulses of some Indians would undergo variations" due to all sorts of different causes which he then lists. Volney he suspects may even have laughed at both of them. Barton hopes that what he has said "will be satisfactory to you. I remain with best wishes for your prosperity," etc.[868]

Rush replied 10 January 1810, in subdued tone with what appeared to be sincere good wishes:

> *Sir,*
>
> *I am perfectly satisfied with your explanation of the different results of your experiments upon the pulses of the Indians.*
>
> *I send you herewith a pampflet which I have just received from Dr. Valentine with a request to deliver it to you.*
>
> *With Sincere wishes for your health and happiness, and that you may long, very long, continue to employ your talents, Zeal and industry in promoting Science in our country, I am your early friend.*
>
> *Benjm. Rush*[869]

The goodwill the preceding letter seemed to carry to Barton was shattered in the following two months, and enmity again surfaced. Rush, who had not attended the memorial service for Woodhouse, which had been delivered by Barton before the Medical Society 21 February, had been apprised of what he considered "intemperate abuse" of his name. Although we do not have Rush's letter to Barton, its character is unmistakably suggested by Barton's detailed reply:

> *Philadelphia March 10, 1810*
>
> *Sir*
>
> *I have just received your letter. In my eulogium on Dr. Woodhouse, I used no such expression as 'foul means.' I said that the Doctor's appointment was not obtained by an unanimous vote of the trustees; nor by*

868 Rush papers, 27: 8, HSP.

869 Barton papers, APS. No Valentin papers were located for Ewan, "Barton's library."

the consent of all the medical professors; nor without toil, 'fair and unfair, on the part of the professor's friends.' I mentioned no individual name; nor did I allude to any person in particular.

In regard to your observation that I ridicule your doctrines, &c., this is not true. No man depends less upon ridicule as a weapon offensive or defensive, in his writings, or conversation, or lectures, than I do. In my capacity as a public teacher, indeed, I speak with freedom, with delicate freedom, of the theories and opinions of writers and physicians; and I conceive it my duty to do this, as a historian of the science which I teach. I sometimes have occasions to differ from you: but every candid students knows that I do it with delicacy. I often quote you in my lectures, with respect, and, in not a few instances, I refer to your writings for important information; as when I treat of mercury for consumption; when I speak of the remedies for croup, tetanus, &c. What I sometimes endeavour to show, that what is deemed a new frontier, or opinion, is not new, I acknowledge. But this I consider it my duty to do. That I am not, however, very studious to leave the regular path of my subject, in this way, may appear probable from my having never intimated to my class, nor even to my private pupils, that the doctrine of the use of the spleen, which you teach, was published a very long time ago, by M. Belin.[870] *I do not mean to insinuate, that you took the notion from Belin.*

In my eulogium I said some things relative to doctrines of Animal life, which it is probable have given offense. But on this subject, I did not mention your name. I should never have mentioned Dr. Woodhouse's hypothesis on this intricate question, had not several gentlemen, and among them Bishop White,[871] *observed to me, a few days after the death of the Doctor, that he had taught doctrines unfavorable to religion, quoting or referring to Woodhouse's lectures on the affinities of matter in producing the phenomena of life. I said I was of the opinion, that the professor never 'intended' to do any injury, either to morals or religion, in his lectures. Though I was of opinion that, at first sight, 'with the weak and tremulous,' such doctrines did seem unfavorable to religion. I thought the system of Brown, and all other 'physical explanations' of life equally exceptionable, on the face of religion, when we viewed them 'superficially.' But I added, in the most pointed manner—and I am quite willing to show you the passages exactly as I read them in public—I added, that neither Brown, nor any of the other founders and supporters of these doctrines taking as they did, an ample view of the subject, either meditate injury to the morals or religion of their country, or more even sensible, that their hypothesis would admit of an 'interpretation' of this kind. I took notice of the effects of Haller's papers in irritability and sensibility in the mind of La Mattie*[872] *and others. I even added that some of the doctrines I alluded to were supported by able and eloquent defenders of the 'Christian faith.' I have no doubt that this is a part of my eulogium which was interpreted by you as ridicule: no ridicule was intended. The subject was treated in as solemn a manner as I was*

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870 Lorenzo Bellini (1643–1704), Italian physician, anatomist.

871 William White (1748–1836), Philadelphia born and educated; first Protestant Episcopal Bishop of the Diocese of Pennsylvania, an early member of the APS. J. C. Ayer in *DAB*; Drake, *Dictionary*.

872 Albrecht von Haller (1708–1777), leading German physician and author of books in Barton's library and LCP. Wagenitz, *Göttinger*. For comments on his work see Morton, *Medical Bibliography*, especially no. 587, which Barton refers to. Julien-Offray La Mettrie (1709–1751), physician-philosopher, anatomist, author of *L'Homme Machine* (Leiden, 1748), was burned as heretical. Morton, *op. cit.*, no. 586.

capable of, with a view,—and I understand it produced the effect on many—of vindicating the character of Dr. Woodhouse from the charge of atheism or something of the kind.—I say, I shall with pleasure, read to you or show you, the whole of what I said on the subject.

In regard to what you have argued against me, in a former letter, which I did not fully answer, because with your answer to mine, on the subject of Volney. I was willing, that all differences between us, might be at an end,—that I among others, had contributed to injury of your practice and character, by publishing in the newspapers, it is not true. I solemnly declare, that I never wrote nor dictated one syllable against you, in any of the papers published in America, or elsewhere. I defy any editor of a paper, or any editor's successor, to say that I have. And, permit me to remind you, Sir, that I was absent from Philadelphia during the whole of the fever of 1797 [873] *when if I mistake not, your modes of practice were more violently attacked, in the public prints, than at any former, or after period.*

With Dr. Reynolds[874] *I never had a conversation to the amount of what you state in your former letter. I never considered the doctor as my friend and therefore should indeed, have acted foolishly in speaking intemperately to him, concerning you, or any other person. I well recollect to have heard Dr. Reynolds speak in terms not the most friendly to you, on one occasion in particular. I solemnly declare, that I have never used, in regard to you, in speaking with him, such language as you have mentioned.*

In regard to my application for the chair of Chemistry, it is well known to everyone, that you opposed, and violently opposed my pretensions. To some of the trustees and others, you mentioned as the ground of your opposition, that I was not acquainted with chemistry. When I became a candidate for the Materia Medica chair, you again opposed me, urging, not now, my inability, but a kind of duty which you owed to Dr. James, my competitor. And in the year 1796, immediately after my appointment to the place of one of the physicians at the Pennsylvania Hospital, you told me, in 3rd Street, that these were the true grounds of your preference to dr. Woodhouse, and to Dr. James. You now use as a plea, the letters to Dr. Penington, and Dr. Chapman: and you threaten to read the letters of these gentlemen in public. Your doing this, will, certainly give me pain, and may for awhile injure me. But you will, as certainly injure yourself, and I cannot tremble for the ultimatum. I know, I hope, in what light I am named by the public, as a professor, and as a man. I know something of my own strength; and I am sensible that I have never yet exerted the whole of what I possess. I am persuaded that the indiscretions of a young man, in early life, oppressed by difficulties, will be tenderly considered by a generous and virtuous public.

I think I have said enough to induce any candid man, any man of healing, from taking such a step as you Mention. I can only further say, on this subject, that you will compel me to take steps, which may be injurious to you. I have in my possession the private commonplace book of Dr. Woodhouse. This contains many things, which you would be very unwilling to see made public. I do not wish to publish them.

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873 Barton journeyed to northern New York summer of 1797.

874 Dr. James Reynolds (d. 1808), an Irish-born exile whom Rush esteemed for his talents and knowledge, was on the staff of Philadelphia General Hospital 1804–1807. He died an alcoholic. He had been condemned by Cobbett as a follower of Rush's method of treatment in yellow fever (Corner, *Rush*, 322).

I am, Sir, with due respect, Your humble servant, &c.
B.S. Barton
March 10, 1810[875]

Both the eulogy for Woodhouse, and the letter from Rush to which this was a reply, were actually or figuratively consigned to the flames. Barton's own colleagues and his conscience may have found the innuendoes of a lack of professional capability of an unnamed colleague, who had long been a hero to the general populace, too obvious, as were the stresses of difference in religious philosophy and outlook on the reality of life between Rush and Woodhouse. Barton's reference to materialism suggests a strong sympathy and tolerance for views held by Woodhouse, views that contrasted sharply with Rush's firm orthodox religious faith. Although Barton's letter began with a conciliatory explanation, exonerating himself, it ended with the repeated threat of exposure of criticism in Woodhouse's diary, if Rush should make public John Penington's letter from Edinburgh. All the animosity pent up over the years between the professor who had once held high esteem and hopes for his pupil's compatibility, but no sympathy or understanding of his difficulties in Edinburgh, and the pupil who had disappointed him and had become his too frequent antagonist, whether in the development of the medical school or in medical practice, burst forth in these 1810 exchanges.

One disagreement among colleagues about this time concerned a recommendation to the Trustees of the medical school that a professorship of midwifery be established. Barton and Wistar shared the current prejudice against males attending delivery, considering the practice adequately left to midwives. William Potts Dewees (1768–1841), who had practiced some years before receiving his M.D. degree in 1806, his thesis on lessening pain and facilitating certain cases of difficult birth, had received Rush's endorsement for the professorship. In 1810 Dr. Thomas Chalkley James received the appointment with Dr. Nathaniel Chapman as his assistant until Chapman succeeded Barton to the Chair of Materia Medica on Barton's death. Rush's bitterness and resentment of Barton's influence among physicians is recorded in his undated memo:

> *It was agreed (4 to 2) to advise it. Dr. Barton who was in the minority said 'he would protest against the recommendation in a letter to the trustees.' Dr. Wistar spoke of young men 'running all over town to try to make a Professor of Midwifery.' This could allude only to Dr. Chapman. Dr. Wistar & Dr. Shippen were friendly to the wishes of Dr. James [,] & Dr. Barton told Dr. Dewees openly and candidly that he favored Dr. James. The obvious inference from the facts was that neither Dr. Chapman nor Dr. Dewees would be successful in their applications for the Professorship. No recommendation took place to the trustees of a professorship—clearly on account of the hostility expressed to it by Dr. Barton.*[876]

Appended to the note above is Dr. James Rush's addition to his father's memo, dated 12 March 1832, regarding Chapman's effort to win a "place" in Pennsylvania Hospital. Chapman declined presenting "documents" to Rush, with whom, although he had been his pupil, he had parted company in the disagreements over yellow fever. Instead he presented his qualifications through a trustee, Richard Peters. Rush's reference in his note to Barton's appealing to the trustees dates from years back, when he noticed the influence of Peters, Rittenhouse, Andrews, and Smith, in Barton's receiving appointments.

During those trying months of 1810 Rush wrote to his son James, then a medical pupil at Edinburgh. In a nostalgic letter of March 19 he reminisced: "Perhaps there is at present no

875 Rush papers, 27: 9, HSP.
876 Rush papers, 29: 77, HSP.

spot upon the earth where religion, science, and literature combine more to produce moral and intellectual pleasures than in the metropolis of Scotland." Thinking of two good friends who had befriended him there, he wrote, "I cannot think of Heaven without seeing them near the throne of our common Savior."[877] Edinburgh also brought to mind Barton, and Rush's still unsatisfied curiosity of the action of the Royal Medical Society, and so he wrote another pupil, Wallace, who responded in March 1811, confirming details of what John Penington had written.[878] Of what James Rush told his father we have no record.

To "my dear Friend" John Adams, 8 September 1810, Rush reviewed his feelings, harking back to the conflict in the spring. He told Adams that he had been the victim over the years of four "kinds of hatred"—of theologians, politicians, philologists, and of physicians for teaching a system of medicine that had robbed them by its simplicity of cargoes of technical lumber by which they imposed upon the credulity of the world. The last he believed was the "most deadly hatred of them all." He went on to comment that Cobbett had acknowledged that three physicians in Philadelphia had influenced him in 1797 to write against him for his views on the efficacy of bleeding in combating yellow fever. From Barton's letter of 31 September 1797, it is clear that Rush considered Barton to be one of his three adversaries. Rush also told Adams that Nathaniel Chapman "began to calumniate" him in the *Port Folio*. "For this [Chapman] has been cherished by all our physicians who are opposed to my system of medicine." As an example of *odium medicum* he wrote that Chapman declared that "all I have ever written is 'fit only to rest upon a dunghill.' I am not moved by this instance of ingratitude [from a former pupil]" wrote Rush, "for I am accustomed to much greater."[879]

Friendly to both Barton and Rush over the years, David Hosack had enrolled in courses at Philadelphia in 1790. Influenced by both, he maintained an independent spirit in the years to come. With Barton he shared an active interest in botany and the hope for an "American Flora." Whereas Rush insisted that there was but "one disease in the world," fever, Hosack saw three causes of disease: inherent, from external agents, and from a proximate cause. Diseases were different and were transmitted in various ways. Yet Rush appreciated the fraternal spirit of Hosack, an "eminently clubbable man."[880]

"Oh that I were a member of any other profession than that of medicine, that I might not call physicians my brethren," Rush had written to Hosack on 15 August 1810, after thanking him for "the liberal manner in which you have dissented from my opinions."[881] On 8 September he wrote:

> *All my family unite with me in requesting you to make our house your home while you remain in Philadelphia. Let us show the world that a difference of opinion upon medical subjects is not incompatible with medical friendships; and in so doing, let us throw the whole odium of the hostility of physicians to each other upon their competition for business and money. Alas! while merchants, mechanics, lawyers, and the clergy live in a friendly intercourse with each other, and while even the brutes are gregarious, and 'Devil with devil firm concord holds,' to use the words of Milton, physicians in all ages and countries, riot upon each others characters! How shall we resolve this problem in morals? Benjamin Rush*[882]

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877 Butterfield, *Rush*, 1038–1040.

878 We wondered why we could find no official record in Edinburgh University archives until we remembered that students' fees were paid directly to the professor, not to the University, and so there was less University record-keeping.

879 Butterfield, *Rush*, 1060–1061.

880 Robbins, *Hosack*, 22, 42, 140, 145.

881 Butterfield, *Rush*, 1058.

882 Gross, *Lives*, 315. Hosack delivered an appreciation of Rush 3 November 1813, published in *Ann. Philos. Mag. Chem.* 8 (1816): 81–87.

In 1811 Rush published *Sixteen Introductory Lectures to Courses of Lectures upon the Institute and Practice of Medicine, with a syllabus of the latter* (Philadelphia, 1811), "a blend of clinical insight, religion and philosophy." This included lectures from his earlier *Six Introductory Lectures* (Philadelphia, 1801).[883] "To my dear old friend," John Adams, Rush wrote on 12 February 1812:

> *Your correspondent early devoted himself to the cause of humanity. He has lived in a constant succession of contests of ignorance, prejudice, and vice, in all which his only objects were to lessen the miseries and promote the happiness of his fellow men, and yet he has lived a life constantly exposed to malice and persecution.*[884]

On 4 November, at sixty-eight years, and feeling the pains of professional isolation, he wrote again:

> *Yesterday I began my annual labors by delivering an introductory lecture upon the 'Duties which physicians owe to each other and the causes of their dissensions.' I ascribed the latter to their being less gregarious than the members of other learned professions, and recommended, as a remedy for them, frequent social and convivial meetings.*[885]

He stressed the influence of what Sir Thomas Brown calls "commensality" upon morals, manners, and happiness.

After thanking Adams for his kindly reception of his *Medical Enquiries and Observations upon the Diseases of the Mind* (Philadelphia, 1812), Rush reported 14 December 1812 that it had been well received particularly by members of the bar, that not a single physician in Philadelphia, with one exception, had mentioned it to him. This was the work Adams believed had done more good for mankind that any of Franklin's and was Rush's greatest contribution to medicine. Rush had written:

> *It is a curious but not a singular fact that those* [doctors] *who owe me the most obligations are the most hostile to me. In spite of their malice, aided by all the disadvantages to which my whig principals and conduct during the Revolutionary War have exposed me from the tories, it has pleased God to crown the labors of the evening of my life with such abundant success that I am now in easy circumstances... We have now a competent and regular income, chiefly from well-situated property, and we do not owe a dollar upon note, bond or mortgage in the world.*[886]

On 22 January the following year he confided "I live in a beehive, and save myself from being stung to death only by being passive and apparently as lifeless as an old dead tree."[887] Had he chosen mechanical arts or agriculture he "might have acquired more fortune and rank in life...and escaped much of the vexation and distress that are connected with the practice of medicine..."

Summing up his financial status toward the end of his life, Rush recorded: "including the business I did without charging it, and bad and absolved debts, I have not been paid more than one-fifth of the labors of my life." He had often treated the poor without collecting any

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883 Corner, *Rush*, Appendix I, Rush's Medical Theories.
884 Butterfield, *Rush*, 1123.
885 Butterfield, *Rush*, 1165.
886 Butterfield, *Rush*, 1169.
887 Butterfield, *Rush*, 1178.

fee, and he had sued but six patients for unpaid bills, thus he felt he had lost thousands of pounds over his lifetime. In 1790 he had forty-five medical pupils under him; by 1812 the number had risen to 332. From 1779–1812 he had altogether 2,872 students registered for his medical lectures. The fees collected in that span were $69,000. His deep hurt over the differences with other Philadelphia physicians, and especially with former pupils, and with Barton particularly in mind, he wrote for his children:

> *I took pleasure in promoting the advancement of young physicians in knowledge and business. I have received returns of gratitude from but few of them. Those whom I served most essentially have been my greatest enemies. Such have been the acts of hostility I have received from some of these physicians I have obliged most, that I have sometimes thought when any of them called upon me for a favor, to demand from him previously to my granting it, a written obligation with a penalty that he would not at a future day cut my throat.*[888]

From the back window of his early home on Front Street Rush could watch the cargoes of sugar and rum from the West Indies—the yellow fever was invisible. As his practice and fortune grew he moved to 98 South Fourth Street near Walnut, to be nearer the Medical School and hospital. Each morning he set out simply but meticulously appareled and was soon conversing along the way with citizens, many who had been his patients, asking questions for the answers he would record in his Commonplace Book. Therein he noted topics he would enlarge upon in the "Medical Biography," which he did not live to write. Such topics included:

> *Pupil's ingratitude. Others never offended. All hostile. Their connections and patients share in their prejudices and resentments. Patients' ingratitude. Two for whose recovery I suffered most in feeling and interest—P. and L. Story of B. Duffield, and Currie, and Barton.*[889]

Rush's letters to and from John Redman Coxe carry bitter criticism of Barton, and Barton appears perhaps more frequently in his Commonplace Book than any other physician, always in unfriendly terms. As he pondered his past, he would remember his differences with Washington, Franklin, Shippen, with George Whitefield the evangelist, Anthony Fothergill, Sir Joseph Pringle, Benjamin West, William Bradford and Cobbett."[890] He could remember with pride, however, that his former pupil, David Ramsay (1749–1815), had dedicated his *Review of the Improvements, Progress and State of Medicine in the XVIIIth Century* (Charleston, S.C., 1801) to "The American Sydenham, whose writings and observations have greatly improved the Art of Medicine, whose precepts have formed, and whose example has stimulated many others to improve it."[891]

Samuel Miller in 1803 had written "of several distinguished American Physicians, among them Dr. Rush holds the first place, and to whom Medicine Science on this side of the Atlantic owes a debt of gratitude."[892] Reminiscing in 1852 at eighty years of age, Caldwell had decided that he had profited more from Rush than from any other physician, not in the amount of learning, but in the cultivation of the mind. He had not adopted all of Rush's medical practices but had in general taken a more balanced view in the treatment of disease.

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888 Corner, *Rush*, 106–107; Binger, *Rush*, 184.

889 Corner, *Rush*, 355. Did "P." stand for John Penington?

890 Corner, *Rush*, differences with Washington, Appendix I; with Cobbett, Appendix III.

891 Brunhouse, "Ramsay," 196.

892 Miller, *Brief Retrospect*, 2: 393.

As these two noteworthy physicians, Rush and Barton, lived, taught, practiced, and published in the same environs, they only occasionally acknowledged the work of each other. When Rush published *Three Lectures upon Animal Life*, (Philadelphia, 1799) he granted that "this subject belongs to the professor of botany, and natural history [fn. "Dr. Barton"] who is amply qualified to do it justice." (p. 73). Barton in 1812 instructed the reader to "see the observations of Dr. Rush" for the use of quinine bark in tetanus in his edition of *Cullen's Treatise*. Among the hundreds of letters and notes Barton saved is a short undated invitation in Rush's hand that may have held special sentiment for him: "Benj. Rush, Phila. to BSB Dr. Rush requests the favor of Dr. Barton's company to dinner on Wednesday next at 1/2 after 2 o'clock Monday,"[893] Surely a token from earlier, happier days. In 1809 Barton kept an "exact copy" of a very formal note sent to Rush: "Dr. Barton presents his compliments to Dr. Rush & will thank him for the small Latin volume of epitaphs, &c, lent to him, last spring, by Dr. B—at any future period, Dr. Rush shall be welcome to the use of it again. August 24, 1809."[894]

Rush had suffered tuberculosis from the age of eighteen until he was forty and had several attacks of pleurisy and "bilious fever." For months he suffered headaches and vertigo, but after he was fifty-nine he had "enjoyed uninterrupted health" except for a few colds.[895] He died 19 April 1813, after a few days' illness. Thomas P. Cope (1800–1851), a Philadelphia merchant, recorded in his diary for 24 April:

> *Our distinguished fellow citizen, Dr. Benjamin Rush who had been for nearly 30 years one of the physicians of the Penna. Hospital died of the prevailing typhus fever on the 19th, a victim, as it is said, to his favorite system of depletion. Blood letting has been found to be very destructive in this disease while high stimulants—wine, brandy, opium, &c—prove very efficacious. The Doctor had himself bled. Physicians being called in perceived this error & strongly urged the use of brandy, which however, he declined taking.*[896]

There seems to have been no eulogy delivered before the American Philosophical Society.[897] Barton could not with honesty deliver a paean of praise, nor even allow himself to speak on the man, so strong were his emotions. Cross-hatched out from the reverse of a sheet of an updated letter to the medical faculty is, "By this, I willingly resign the task of eulogy in the memory and character of Dr. Rush the late professor of the Theory and Practice of Medicine. But I cant deny [these last three words were strongly obliterated] it is a duty which I owe to my own feelings, this publicly to declare now"—but he did not complete the sentence. He made himself a memorandum dated 30 July: "I this day destroyed the whole, or at least the greater part, of the ms. of the little eulogium which I pronounced to my Bot. class in 1813, a few days after his death, upon Dr. B. Rush. At the delivery of this eulogium, if I don't much mistake, there was present Dr. Staughton. BSB."[898] Reverend Staughton had delivered his *Eulogium in Memory of Dr. Rush* (Philadelphia, 1813) 13 July. Printed it amounted to about thirty-two pages. Barton's talk before his botany class must surely have been delivered with deep emotion, not only for the resentment engendered by Rush's lack of understanding, but toward his medical practices and his narrow religious and moral philosophy. Regardless of the sentiments of many contemporary physicians, David Hosack in his eulogy wrote what was to

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893 Barton papers, APS.
894 Barton papers, APS.
895 Butterfield, *Rush*, 1142–1143.
896 Harrison, *Cope*, 281.
897 None noticed in APS, "Minutes."
898 Barton papers, "Miscellaneous." William Staughton (1770–1829), Baptist clergyman, was Rush's friend and a visitor to his lectures. Butterfield, *Rush*, 1026.

be the public legacy for Rush: "What Boerhaave was to the medical school of Leyden, or Dr. Cullen to that of Edinburgh, Dr. Rush was to the University of Pennsylvania."[899]

At the request of the Medical Society of South Carolina, David Ramsay delivered an *eulogium* 10 June 1813.[900] There were letters. John Peter Mettauer of Prince Edward, Virginia, one of the more gifted of the medical graduates (M.D. 1809), a former pupil of Barton and Rush, wrote his estimate 21 February to a Philadelphia friend, John Warfield Johnston at Paines Tavern:

> *Rush had many foibles both as a man & as a physician, but he was the ablest practitioner & the most minute observer in medical matters; that this country ever has produced, not withstanding all his faults; he would not only explain the hidden nature of disease theoretically, but would pour forth an inexhaustable torrent of Therapeutics drawn from actual observations & that too directed by the most perservereing sagacity. he also was candid ingenuous & communicative on all subjects. his peculiar talent for observation particularly in medical matters I am satisfied never can be equalled by Dr. Barton.*[901]

J. T. Flexner, *Doctors on Horseback* (New York, 1937), has a spirited chapter on Rush. When assessing "great medical practitioners," Chauncy D. Leake gave the laurel to "the always involved Benjamin Rush...the busiest and best of the many great Philadelphia physicians."[902] Laudatory sketches of Rush such as John Bell's[903] must be considered in the light of Jacob Bigelow's appraisal of 1804:

> *Students in all former years, have expended much time in learning, what it afterwards cost them both time and trouble to unlearn;—in acquiring, not merely the truths of science, but the crude announcements and plausible doctrines of sanguine or ingenious men. How much time has been wasted in some of our distinguished Seminaries, in acquiring the visionary and now neglected theories of Rush and Broussais!*[904]

That Rush himself, worn down by controversy and now in "a rare instance of the modesty of merit," was uncertain of his place in the history of medicine is illuminated in his response to a request from John Kingston for information to be included in *The New American Biographic Dictionary*... (Baltimore, 1810). He answered Kingston:

> *My opinions upon many subjects and my innovations in the practice of medicine have so much divided my fellow citizens upon the subject of my talents and character, that it will be impossible for many years to decide the controversy respecting either of them. Those who come after me (if my works should survive my interment) will be the best judges whether I have added by them to the knowledge and happiness or to the errors and miseries of my fellow citizens.*[905]

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899 *American Monthly Magazine & Critical Review* 1 (1817): 190.

900 *An Eulogium upon Benjamin Rush* (Charleston, S.C., 1813); Brunhouse, "Ramsay," 175.

901 Perkins Library, Duke University.

902 Lester S. King, ed., *Mainstreams of Medicine* (Austin, Tex., 1971), 12.

903 In S. D. Gross, *American Medical Biography* (Philadelphia, 1861), 464.

904 Bigelow, *Disease*, 95–96. François Joseph Victor Broussais (1772–1838), French physician and medical teacher. Garrison, *Hist. Med.*, passim.

905 Butterfield, *Rush*, 1028.

In 1792 Rush had written in his Commonplace Book: "A thought. Dr. Witherspoon says all men are found out before they die. I deny it. Some men are not found out 'till after death, and many will not be fully known' till after the Day of Judgment."[906] His Creed: "Medicine is my wife; science is my mistress; my books are my companions; my study is my grave, here I lie buried, the world forgetting, by the world forgot." Recently Carl Binger has said that Julia Rush had understood him better. She was, as he had often said, the faithful companion of his pains and pleasures. She had once said that there was no character in history more like him than Martin Luther—ardent in all his pursuits, fearless of the consequences of attacking old prejudice and often hasty in his manner of speaking of his enemies.[907]

George Corner's *Rush* unlocked the soul of a tormented man. Yet in January 1813, a few months before Rush died, Charles D. Meigs had written to his father in Georgia, "Dr. Rush looks like an angel of light, his words bear in them, and his looks too, irresistible persuasion and conviction:—in fact, he seems more than mortal. If ever a human being deserved Deification, it is Dr. Rush."[908] Yet that Rush was largely blind to his obligation as a physician to check hypothesis against the facts, that he was an observant man, but not a good observer is the conclusion of Richard Shryock.[909] Corner has also given a modern appraisal.

These colleagues, Rush, the teacher, and Barton, once his pupil, brought lasting harm to each other, though not without cause, adversely affecting the lives of each, and although Rush's enmity may early have acted as a stimulus to Barton in his early years, in later years it may have intensified his ill-health. Barton, in closer touch, and with keener observation of the natural world, was able to judge more accurately the results of excessive bleeding and the great doses of popular chemical remedies of the time, and so prescribed each in more moderate doses. Medical science has always progressed by experiment, whether on other animals or on human patients, and Barton himself, or through his pupils, made attempts to discover the more natural new plant remedies and their effects on humans. Rush philosophized and hypothesized with less keen observation of effects.

An example was the unnatural treatment of Rush's young son John, who at fifteen years was sent to Princeton under strictest rules. He was not to live in the dormitory with other boys of own age, but in a private home, because "college life and college society to boys of his age [are] alike fatal to morals and manners." John was to study constantly and not associate with other pupils more than in class, from which he was to return immediately. The result was that John rebelled and was caught with three other boys playing cards on the Sabbath. He was removed from Princeton, though the other boys, after confessing in public and returning the gambling money, remained at the college.[910]

Rush's lasting legacies have been given as the more humane treatment of the mentally ill; prison reform; the better management of hospitals, whether civilian or military; and education, advocating it also for women. Dr. Beddoes had written in his life of Dr. John Brown in 1795: "Friendships originating in protection are very prone to terminate in enmity unless difference of rank and pursuits totally preclude competition."[911]

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906 Corner, *Rush*, 215.
907 Binger, *Rush*, 297.
908 Butterfield, *Rush*, lxi, from family letters, Princeton University Library.
909 In *DAB*, see also Corner, *Two Centuries*, and Corner, *Rush*, Appendix I.
910 Carlson, "Rush and son," 1321-1322.
911 See Brown, *Elements*.

Chapter VIII

New Views of the Origin of the Tribes and Nations of America

"Truth...is the jewell which all good and wise men are in pursuit of."
—Barton to Jefferson, 1797.

Indian Language and Medicine

In 1797 Barton was to publish the first edition of his *New Views*, his account of the history and development of American Indian languages, and their association with those of Europe and Asia. As he explained his interest:

> *As early as the year 1787, whilst I was a student of medicine at the University of Edinburgh, I endeavored to discover, whether there was any resemblance between the American and Asiatic languages. But although I devoted a good deal of time to the inquiry, I met with little success. Upon my return to my native country, in the latter end of the year 1789, I resumed my inquiry, and by the assistance of the tables in Strahlenberg's work*[912] *and very mutilated vocabularies of the languages of some of the American tribes...In the midst of many, and more favorite pursuits, I never entirely lost sight of this...until the spring of 1796, when I received, through the hands of my learned friend, Dr. Joseph Priestley, the Vocabularia Comparativa of Professor Pallas. It is this great work that has enabled me to extend my inquiries, and to arrive at some degree of certainty on the subject.*[913]

One of his inspirations had been Thomas Jefferson's *Notes on the State of Virginia* (London, 1787). In his dedication of his *New Views*, dated 21 June 1797, Barton addressed Jefferson:

> *These pages are, with peculiar propriety, inscribed to you. I know not that any person has paid so much attention to the subject which they involve: I know no one who places an higher value upon the question which I have ventured to discuss...I am confident, from my personal acquaintance with you, that you are anxious for the discovery of truth, and ardent to embrace it, in whatever form it may present*

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912 Philip J. T. von Strahlenberg (or Stralenberg) (1676–1767) was author of *An histori-geographical description of the north and eastern part of Europe and Asia; but more particularly of Russia, Siberia, and Great Tartary both in their ancient and modern state: together with an entire new polyglot table of the dialects of 32 Tartarian nations...Faithfully translated into English* (London, 1736), a copy LC. Barton introduced "Preliminary Discourse" p. i, *New Views*, with a quotation from Strahlenberg.

913 See Pallas, *Comparative Lexicons*, in our References for details. Catherine the Great had collected languages and inspired the work. Pallas (1741–1811), a German, was Professor of Natural History at St. Petersburg. He was elected to the APS 21 October 1791. Urness, *Pallas*, 161–168, bibl. 176–177; Vasiliy A. Esakov in *DSB* does not mention this.

> *itself. It is the jewell which all good and wise men are in pursuit of. It is the punctum saliens of science.*

He then touched upon a subject that distressed them both:

> *I regret, with you, Sir, the evanishment of so many of the tribes and nations of America. I regret, with you, the want of zeal among our countrymen for collecting materials concerning the history of these people. I regret the want of necessary endeavours to introduce among those of them who have escaped the ravages of time (instead of the vices and the miseries of half-civilized nations) the true principles of social order; the arts which conduce to the dignity and the happiness of mankind, and a rational and lasting system of morals and religion. Let it not be said, that they are incapable of improvement. Such assertions can only suit those speculative philosophers who retire to their closets involved in a thick atmosphere of prejudices which the strongest lights of truth cannot pervade...*

Here Barton had referred particularly to Buffon, De Pauw, and Robertson, who had gained all their knowledge of North America from books. He continued:

> *If civilization be a blessing; if man by relinquishing the condition of the savage or barbarian, assumes a more independent station in the range of human affairs; if in proportion to his advancement to improvement (I speak not of a vicious refinement), he is even fitting himself for the enjoyment of the higher comforts, of unmeasured happiness elsewhere, it is surely worthy the attention of the good and wise to endeavour to extend the empire of civility and knowledge among the numerous nations who are scattered over the countries of America...I know not, sir, whether the government of our country will think the civilization of the Indians a matter of as much importance as I do: but I must confess, that I derive a portion of my happiness from supposing that they will. Should I be disappointed, I shall have no occasion to look back, with pain or remorse, to the times when I have indulged my feelings on the subject.*

Continuing in "Preliminary Discourse," page xix, he turned to his concern for preservation and understanding of Indian languages:

> *It is to be lamented, then, very much lamented, that we have suffered so many of the Indian tribes to extinguish, without our having previously collected and deposited in the records of literature, the general rudiments at least of the languages they spoke...* [If preserved those skilled in the languages of the world could] *construct the best evidence of the derivation of this part of the human race.*

Throughout his text and in footnotes Barton referred to a prodigious number of writers, American and European, from whom he had gleaned information for his comparison of languages. He queried visitors, and he sent letters to residents throughout the settled areas. Barton had in his library, perhaps from his father, Lawrence Claesse, *Morning & Evening Prayers, Litany & several Chapters of the Old & New Testament translated into the Mohaque Indian Languages* (New York, 1715), now at the APS. He had John Eliot, *The Holy Bible: containing the Old Testament and the New. Translated into the Indian Language* (Cambridge, Mass., 1663). He also had a copy of George Henry

Loskiel, *History of the Mission of the United Brethren among the Indians in North America* (London, 1794), but these two last books have not been located.[914]

As early as 1789, newly home from Edinburgh, Barton issued proposals for publishing "An Historical and Philosophical Inquiry into the Original, Nature, and Design of Various Remains of Antiquity..." He sent a copy of the *Proposals* with this letter to President George Washington:

> *Philadelphia, July 26th 1790*
>
> *Sir,*
>
> *I have taken the liberty of transmitting to your Excellency a paper of Proposal for a work which I am about to publish. The honour of your name, Sir, will confer a singular favour on me.—*
>
> *The objects of the work are both curious and important:—and investigation of them I have undertaken and intend to submit the results of my inquiries to the Public, in the course of a few months.— But little known, and unpatronized, I have ventured to submit a name which will, doubtless, add a consequence on my work, and will contribute to the success of my subscriptions.—*
>
> *Hoping your Excellency will pardon this liberty,*
> *I remain with the most profound Respect,*
> *B. S. Bartone*[915]

Was the added "e" to his name merely a penman's flourish? We found no response. In the year intervening between his *Proposals* and the resulting *New Views*, Barton had exchanged with Jefferson opinions on many aspects of Indian life and language, and their mutual interests were to continue.

Alexander McGillivray had informed him that "the Cherake are of more ancient establishment in the country east of the Mississippi than the Muskohge. Accordingly, the former call the latter their younger brothers." William Bartram ("M.S. penes me") wrote that "The Creeks a few years ago had above sixty towns, in more than 30 of which Muskohge language was spoken."[916]

Two Moravian missionaries, both students of Indian life, provided Barton with first hand observations. Rev. David Zeisberger (1721–1808),[917] born in Moravia, had lived in England before coming to Georgia, where he worked with his father as a carpenter. He entered the Moravian clergy in Savannah, left for Pennsylvania in 1739, and was one of the founders of Bethlehem, in that state. It was as a devoted missionary to the Iroquois at Onondaga that he gained his background in Indian languages. He had made a special attempt to court the Delawares with a view of keeping their friendship for the British. A copy of his *Essay of a Delaware-Indian and English Spelling Book* (Philadelphia, 1776) survives in Barton's library. At Barton's request he supplied him with a manuscript copy of the Onandago language, the copy transcribed by Heckewelder in 1797.[918]

Nowhere more than in letters to and from Heckewelder does Barton show his versatility of interests. It is in regard to Indian languages that we are interested here. John Gottlieb Ernestus Heckewelder (1743–1823, Figure 33), born in Bedford, England, the son of a Moravian churchman, was brought to America as a lad of eleven, and by the age

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914 *New Views*, "Preliminary Discourse," xxiii–xxiv.

915 Ewan, "Barton's Library," nos. 83, 109, and 213.

916 Record Group 59, Records of Dept. of State, Misc. Letters. Natl. Archives.

917 Greenfield, "Zeisberger," 189–198, and Schwarze, ibid., 172–187. illus; Albert G. Ran in *DAB*.

918 D. Zeisberger, "Words in the language of the Onandagos" copied by Heckewelder is a stitched booklet of 50 leaves, "Received March 7th, 1797," and signed "BSB," APS "497–V85" of "Vocabularies."

of nineteen had visited the frontier tribes of Ohio.[919] John took to Indian ways, learned their languages, appreciated their traditions, sympathized with their plights, and from 1771 until 1781 assisted Zeisberger. In his journal he makes mention of "Mr. David," especially during the early years of his missionary service. In 1797 he was stationed with the Chippewas near Lake St. Clair, but after Indian difficulties there, he was moved to Gnadenhütten Mission on the Muskingum River until 1810, when he moved to Bethlehem.

Heckewelder "crossed the Alleghany Mountains thirty times, made a number of trips down the Ohio river from Pittsburg, and recorded from his own observations the first great drive of the white population into the West." His marriage to Sarah Ohneberg at Salem, Ohio, on the Cuyahoga River in 1780 was the first wedding of a white couple in Ohio.

Although his labors with the Indians supplemented Zeisberger's, through his simple straightforwardness and understanding, Heckewelder gave Indian problems a more even perspective, even though he insisted that the Indian was cruel only because he lacked Christianity. He devoted much time to the study of their habits, particularly their language.

In 1794 Barton wrote Heckewelder on several subjects and that he was interested in, for example, a comparison of the bodies of whites and Indians. In a letter of 15 August 1795, he thanked Heckewelder for a package that had come by a Mr. Drinker, and queried, "To what nation did the children who committed suicide belong?...Do the Chenangoes speak the same language of the Six Nations? What is the language of the Wyandotes, and Nanticoks?" and "Do the Delawares have a word for Earthquake?" Heckewelder replied from Bethlehem, 22 August 1795:

> *Dear Sir*
>
> *This morning I received Your favor of 15th Inst. by which I saw the packet I sent by Mr. Drinker, was safely delivered—I now shall attend to the answering of those questions as mentioned in Your Letters.*
>
> *The Indian I mentioned in my last, who committed suicide was a Shawnese by birth, but who had long resided & married among the Delawares. He was a man much respected for his Sobriety &. His Wife having committed Adultery, & showing a disposition to leave him, he thought better to be out of the way, than deprived of his Children whom he so dearly loved & whom She would keep to herself. I was well acquainted with this Man, who to my knowledge was both Sober and Industrious, & a tender Husband to his Wife—*

Then, after this sympathetic portrait of an Indian, Heckewelder turned to language:

> *The Cashnewayaas speak the language of the Six Nations. I was informed there is but little difference between their language & that of the Mohawks.*
>
> *The Wyandott Language is nearest that of the Six Nations, & some words entirely the same. Mr. Zeisberger who spoke the Language of the Mingoes, at Six Nations could understand a good deal, the former said, when they spoke.*
>
> *The Nanticots Language I am not able to determine which it comes nearest. Neither Mr. Zeisberger who as above mentioned*

919 Wallace, *Heckewelder*, viii. Wallace assembled Heckewelder's journals. Bynum, *Bethlehem*, 580–589, portr. Albert G. Rau in *DAB*.

> *spoke the Mingoes & Delaware; nor I who understand both Delaware & Mohicans; could understand one Word they spoke. They are Emigrants from Maryland, which Country they Inhabited...*
>
> *I do not know whether I ever mentioned to You that the Delaware have no f. r. & v. in their language—Likewise that where the Delaware have an L or make use of this letter, the Mohicans have the n as for Instance in the Word Yesterday where the Delawares say Wulaque; the Mohicans say Wunaque. Also, in many Words where the former make use of the Letters e, or i, the latter have an a.*
>
> *I must conclude this time, but shall write to You shortly again; whatever services I can render You towards the great work You have undertaken, shall be done with cheerfulness. Believe me to be Dear Sir Yours respectfully John Heckewelder"*
>
> [Barton:] *Rec'd Aug 26 1795*[920]

Barton was "extremely obliged" for the letter. He had not succeeded in obtaining *The Second Journal of Christian Frederick Post on a message from the Governor of Pensilvania, to the Indians of Ohio* (London, 1759).[921] In the first part Post refers to the Delamathanoes—has Heckewelder heard of them? What language do the Catawba speak? Apologizing for troubling Heckewelder for information, Barton assures him that the public will profit.

New Views was generously larded with acknowledgements of the many authors whom he quoted and with recognition of persons from whom he had received Indian words, especially of Zeisberger and Heckewelder. He first gave an account of the various American tribes and nations "taken notice of in his memoir," then considered Asiatic and European languages compared with those of America. A word of the Delaware or Lenni Lennape Indians heads each list of languages, since he has more information about them from Zeisberger's *Essay* and from John Heckewelder.

No sooner had Barton put *New Views* into print than he realized how much more information he needed. That may have sparked his trip to northern New York in 1797 and led him to record in his Commonplace Journal:

> *The reader has already seen so much of my fondness for Indian matters, that he will not be surprized, nor I hope displeased, that I pause in this place, to give an account of the Seneca, who formerly possessed a very considerable tract of country in this part of the State of New York.*[922]

He then proceeded to tell of early settlement along banks of the "Jenisseia" [Genessee] River, De Laet's map,[923] and the war against the Koghuagians, a former tribe living in the vicinity of Lake Erie, etc.

After his return from northern New York, Barton on 29 November 1797 acknowledged receipt of letters of 4 and 10 October from Heckewelder and was grateful

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920 Barton papers, APS.

921 C. F. Post (1710–1785), German-American Moravian minister who worked among the Iroquois and Six Nations, sometimes with Zeisberger. He was skilled in the Mohawk language. Albert G. Rau in *DAB*. His first journal to the Ohio and the Delaware, Shawanee, and Mingo Indians is included in the one volume by Charles Thomson (1729–1824), *An Inquiry into the causes of Alienation of the Delaware and Shawanese Indians* (London, 1759). APS.

922 Barton, Commonplace Journal, New York; HSP.

923 Joannes de Laet (1593–1649), Flemish geographer, author of *Nieuwe Werckdt* (Leiden, 1625). Skelton, *Maps*, 64, pl. 57, reproduces a modified version. South is at the top of the page, and the map is decorated with pictures of animals and vignettes of Indian villages.

for his comments on *New Views*. He will happily acknowledge Heckewelder in his new edition for whatever he sends. The connection of the Pampticoughs with the same people as the Nanticokes deserves attention, he writes, and perhaps comparing languages will settle the question. How shall he obtain a collection of words in the Pampticoughs language? Perhaps Mr. Zeisberger may assist. He knows that Heckewelder will judiciously distribute the copies of *New Views* that he has sent. "When I reflect how much You have benefitted me by your valuable correspondence and company I feel extremely anxious to make some return."[924]

"In this new edition [*New Views* (1798)], there are many important additions to the vocabularies," wrote Barton on page xxiii of his "Preface." Differences in the new edition had begun on pages ix-x, where he had added an explanation of his rendering of pronunciation. His acknowledgements that follow are somewhat altered and enlarged. The "Preface" is extended from page xii to xxviii. Most remains the same, however. On page lxxv of "Preliminary Discourse" he wrote, "The farther we push our researches of [resemblances of language] the more we discover the proofs, if not of the absolute derivation of all mankind from one pair, at least of the ancient intercourse of all the nations of the earth." He then proceeded "to give some account of the different Asiatic and European nations whose languages are compared with those of the Americans." He concluded on p. lxxxix, "I concede for the present, that it may be doubtful, whether the Asiatic and European nations, whose languages I have compared with those of the Americans, gave origin to the latter, or whether the latter are not rather the original stock of the former." His caution was influenced by the opinion of Mr. Jefferson, that the nations of America are "of greater antiquity than those of Asia."

While Barton could accept a land bridge for the passage of man and animals from northern Asia into northwest America, he could not accept Clavigero's[925] "notion that there was an ancient union between the equinoctial countries of America and those of Africa, and a continuation of the northern countries of America with those of Europe or Asia; the latter for the passage of beasts of cold climes, the former for the passage of quadrupeds and reptiles peculiar to hot climes."

Especially interesting to us today in view of contemporary acceptance, finally, of Wegener's theory of continental drift is Clavigero's "notion." Barton was not convinced that South America had received any of its animals from Africa, since the animals found now are so different.

Also in "Preliminary Discourse," cviii-cix:

> *A very learned writer has supposed, that the Mexicans and Peurivans came later into the new-world...descended from those nations whom Kublai Khan sent to conquer Japan, and who were dispersed by a dreadful storm, and it is probable that some of them were thrown on the coast of America, and there founded these two great empires.*

Barton here disagreed with Forster[926] and believed "The antiquity of the Mexicans and Peruvians may confidently be traced to a more remote period than that just mentioned. The annals of these people ascend much higher." He rests their antiquity on the little resemblance between those languages, and those of the old world.

"In a work of this nature," wrote Barton, "more than in most others, it is necessary to give the authorities for my system... I shall not take any pains to convince the learned, that

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924 CPSP, the letter reproduced in *Ann. Med. Hist.*, n.s. 8 (1936): 84-.

925 Clavigero, *History of Mexico.*

926 Johann Reinhold Forster, *Observations made during a Voyage round the World, on Physical Geography, Natural History and Ethic Philosophy* (London, 1778).

I have uniformly laboured to be accurate; and I have suffered my attachment to system to mislead me from the virtuous path of truth." He would feel grateful for real errors pointed out.[927] He has added many "important additions to the vocabularies" although still imperfect "it is much more perfect than we had reason to expect, from our want of material a few years ago." The path he treads "is almost entirely new. I may without vanity, compare myself to the new settler in the wilderness of our country. I found no cultivated spot. In the vast forest, my easiest task was the removal of brambles and thorns. Unequal to the opening of an extensive road, I have at least, succeeded in opening a path." Then Barton reminds the reader, as he does in other works that "more ought not to be expected of *one* person, who, in the practice of a profession as anxious as it is important, has known neither the felicities of leisure nor of wealth."[928]

He concluded that:

> *...whatever relates to the physical or moral history of the Americans...will be greatly received and acknowledged. In the fervid season of youth, I may, perhaps calculate upon labours, upon successes and exertions, to which I am unequal...I have, however, the satisfaction of knowing...that I have actually made much progress in an extensive work, which, even in its present unfinished state may be of essential service to the future historian of America.*[929]

The appearance of *New Views* documented Barton's acceptance of the trans-Beringian migration of peoples out of Asia, his opinions bolstered by his study of languages of at least twenty-three tribes of North American Indians, some Mexican, Central American, Brazilian and Chilean, these from no less than thirty-five sources. He dated the arrival of the American Indian before the generally accepted date of 4004 B.C. for creation, thus demonstrating his freedom of thought from biblical strictures.

Willey and Sabloff suggest that Barton's conclusion is one of the first attempts to give a real time-depth to the pre-Columbian history of the New World.[930] Samuel Foster Haven, archaeologist and librarian of the American Antiquarian Society, wrote in 1856 that "the labors of Dr. Barton are entitled to the highest praise; but they were in a path travelled before...Pursuing the same line of investigation he advanced further than his predecessors, and having, with great patience and industry, accumulated a larger stock of materials, he very much extended the field of inquiry."[931]

John Wesley Powell commented that in 1798 Barton in *New Views* had correctly allied the Cherokee language with that of the Iroquois.[932]

Acknowledgement of his sources of *New Views* began "All the words in italics under the head of Lenni-Lennape, or Delaware, are taken from Zeisberger, Essay...or were communicated to me by my industrious friend Mr. John Heckewelder (of Bethlehem) to whom this work is under many obligations."[933] Barton then proceeded to give other sources. One of his difficulties with vocabularies supplied by these two was that they gave a German pronunciation as they recorded Indian words. Barton also struggled with French and Spanish records of pronunciation. There can be no question but that Heckewelder found his correspondence with Barton a pleasant diversion to his

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927 *New Views*, "Preface," (1798), xxii.

928 *New Views*, "Preface," xxiii–xxiv.

929 *New Views*, "Preface," xxv–xxvi.

930 Gordon R. Willey and Jeremy A. Sabloff, *A History of American Archaeology*, ed. 2 (San Francisco, 1980), 22.

931 Haven, "Archaeology," 56.

932 *7th Annual Rep. Bur. Ethnol.* 1885–86 (Washington, D.C., 1891), 77.

933 *New Views*, "Preface," x. Greene, *American Science*, Chapter 14 considers *New Views*.

wilderness life, and he cooperated generously in response to Barton's persistent queries, such as those of 11 February 1798 to Heckewelder at Bethlehem:

> *Dear Sir,*
>
> *I have received your letter, in answer to mine about the Indians' mentioned by* [Captain John] *Smith. I am much obliged to you.—*
>
> *I am pursuing my inquiry into the relations of the Americans & Asiatic languages. I have received, since I saw you, several valuable collections; and this winter we have in town several Indians, so that I have an opportunity of collecting words myself.—*
>
> *I lately purchased, & have been reading, a work entitled 'History of the Mission of the United Brethren among the Indians in North America,' by G. H. Loskiel. I suppose you have seen this work. May I ask whether its accuracy may be depended upon? In Part 1, p. 85, he mentions an animal, which he calls foati, Viverna nasna. I cannot suppose, that the Viverna nasna of Linnaeus* [his *Viverra narica*, now *Nasua narica*, White nosed Coati] *is found so high up in North America. In page 191 he speaks of the Moshkos* Indians. I never before heard of them. Can you tell me any thing about them?*
>
> *I have just been informed, that you mean to pay another visit to the western country. I hope to see you before you go. When you can find liesure, I hope you will think of some Nanticok words, &c. for me. I want to know something farther about these nanticoks. I also must ask, in crossing the mountains, you would keep in remembrance by queries about the comparative steepness of the two sides of mountains.*
>
> *I shall be glad to know the result of your inquiries about the Nantick language, as printed in the Bible.*[934]
>
> [In a postscript Barton asked about the "Indian dog, unmixed," and identified the starred [*] name as "Moscoitens," but a later hand added "Mosquetos."]

Letters crossed in transit. We have not located the "valuable letter dated January 29th," but it was appreciated. Barton wrote again 14 February 1798:

> *Dear Sir*
>
> *I have just received your valuable letter dated January 29th. Nothing could have been more acceptable to me. I sincerely thank you for your attention. But how am I to repay it. You mention a large vocabulary of the Onandago language. Is this different from the one you formerly sent to me, & which I have mentioned in the preface to my N.V. as having been composed by D. Ziesberger. If Ziesberger's be not merely a transcript of Mr. Pyrloeus's,*[935] *I shall thank you for some Onandago words from this latter. At present, I shall be contented with those words which I have got in my work, viz. God, Heaven, Father, Mother, &c. with the additions of the following, River, Mountain, Hill, Air, Tree, Neck, Back; the colours White, Black, Red, Green, Yellow.—But I am very troublesome to you.—I wrote to you a few days ago.—Yours, &c.*

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934 CPSP. A copy of Loskiel is at the APS.

935 John Christopher Pyrolaeus (1713–1785), Moravian missionary, his "Lexicon der Macquaischen [Mohawk] Sprachen," manuscript now at APS.

P.S. Should you have no farther occasion with the Indian Bible,[936] *I shall thank you for it, as I am anxious to extract some words. But I beg you not to send it until you have finished the examination of it.*

B.S.B.[937]

Heckewelder's reply 10 March, which Barton marked as received on the 13th, also contained plant information. About Indian queries he wrote:

Dear Sir

My much esteemed friend Mr. Benj. Mortimer[938] *of Nazareth will have the pleasure of delivering this, as also (as I understand) a collection of insects from Mr. Oppell*[939] *to you. He is appointed to travel with me to Upper Canada & if he chuses, to reside with the Christian Indians there, & serve in the capacity of a Missionary. I sent your Indian Bible with my Observations down a week ago, & hope you have received them by this time.*

I dont know whether I ever mentioned Pyroloens says 'In the Onondago Language they have no f. v. p.' I should think they have no b neither. The Del. have no f. r. v...You will have seen in Loskiels Works the interpolation of Lenni Lennape, & Alligewinink, which is different from that I have given You. At the time when he wrote his Book, these words were not perfectly understood. My authority I look upon as good.

In reading Charlevoix[940] *some time since, I find a Nation by the name of Erikas settled on the Ohio River, even on the North side. These were probably Cherokees of whom I had heard the Del. mention as having inhabited that part of the country. The French Canadians generally shorten, & even alter Indian names. In like manner they call the Wiachtenoos (on Wabash) Wyaas. With esteem I am Dear Sir Your affectionate friend John Heckewelder*[941]

Barton responded the same day, 13 March 1798:

Dear Sir,

A few days since I received the Indian Bible, and what was to me of equal consequence, your observations concerning the Natick language. I am under new obligations to you for your kindness to me. I have, indeed, many occasions of acknowledging, how much I am indebted to you for your great attention to my pursuits. I shall endeavour in my general work, to do justice to your assiduity and accuracy.

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936 John Eliot, *The Holy Bible: containing the Old Testament and the New. Translated into the Indian Language* (Cambridge, Mass., 1663).

937 CPSP.

938 Rev. Benjamin Mortimer (1767–1834). Wallace, *Heckewelder*, 426. Dates in the Mortimer diary do not agree on the date of the visit, and there is no mention of a visit to Philadelphia (Wallace, 339 et seq.)

939 Mr. Oppell has not been identified.

940 Pierre François Xavier de Charlevoix (1682–1761), widely travelled French missionary who spent some years as professor at the Jesuit College in Quebec; author of *A Voyage to North America...containing the Geographic Description and Natural History of Canada and Louisiana...with the Customs, Manners, Trade and Religion of the Inhabitants...* (Dublin, 1766). Sabin, *Dictionary*, 12143. Vol. 2 was located at LCP (Ewan, "Barton's Library"), Heckewelder seems to have had Vol. 1. Allen, "Ornithology," 503–504.

941 Barton papers, APS.

> *I should have no objection to your sending a copy of my New Views to Russia if I had not sent two myself. There is no country in which I am so desirous to have my work known as in Russia. I hope it will there excite some attention. I pursue the subject. This is a favourable winter to me. We have, in town, Cochenangos, Tuscarores, and Oneidas; and we have had Wyandots and Miamis. I have made, and am making, great additions to my vocabularies. I shall be able to show great analogies between the American & Tartar & the Asiatic languages. I have, at length, found out the Mexican language in Asia.—You will be surprized at the affinities.—*
>
> *I have just printed a little medical work, of which I send you a copy.—You will have it in your power to render it more perfect.—I am, my dear Sir, Your friend, &c*[943]

Barton may have sent his two copies of *New Views* to Princess Ekaterina Dashkov (1744–1810), an early correspondent of Franklin. She had been elected a Corresponding member of the American Philosophical Society in 1789.[943] She was a confidant of Catherine the Great, a sister of Andrew Dashkov, Russian consul in Philadelphia and a neighbor of Barton's. Johann S. Vater (1771–1826) Professor of Theology at the University of Königsberg, reviewed *New Views*.[944] He praised the work as a "treasure," but criticized Barton for failing to make systematic comparisons among his observations. Barton, he wrote, placed too much reliance on occasional similarities of words in different languages.

Vater completed Johann C. Adelung's *Mithridates*, a cyclopedia of languages sponsored by Catherine, to which contributions from "Americans" were included. Barton was credited with vocabularies of the Messissauga tribe, and no doubt more.[945] When Humboldt came to consider the linguistic evidence for the Asiatic origin of the Toltecs and Aztecs in his *Essai Politique sur le Royaume de la Nouvelle-Espagne* (Paris, 1811), he had little except Barton's vocabularies to guide him.[946] In his *Researches concerning the Institutions and Monuments of the Ancient Inhabitants of America...* (London, 1814), Humboldt cited Barton and Vater. Although Humboldt found their works inconclusive, he found plenty of evidence in monuments, hieroglyphics, cosmogonies, and institutions to establish the probability of ancient communications between the peoples of Asia and America.

While C. Caldwell was editor of *Port Folio* he reviewed Barton's *New Views*:

> *Without attempting to vouch for its effect on the mind of others, and without intending the slightest detraction from the distinguished and well earned reputation of its author, we will be permitted to say, that his comparison has entirely failed to convince us of the original identity of the languages spoken by the nations of Asia and America. In one branch of his inquiry he has been more fortunate. His success in pointing out a radical and striking affinity between many of the native languages of America, as professor Pallas had previously done*

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943 Carson, "Collection," 3: 17.

944 Her election not mentioned in APS, "Minutes," but she is mentioned on pages 162 and 204. Markov, "Relations," 554–559; reference to *New Views*, 562, n. 77.
Gött. Anz. Gel. Sachen. 96 (June 17, 1799): 953–960.

945 Johann Christoph Adelung and Johann S. Vater, *Mithridates oder allgemeine Sprachenkunde* (Berlin, 1806–1817, 4 vols). A copy was purchased by the APS, Duponceau presiding, 20 Sept. 1833. C. C. Wissler, "American Indians and the APS," *Proc. Amer. Philos. Soc.* 86 (1942): 191.

946 Greene, *American Science*, 385–386.

> [in] *Asia... We think there are strong reasons for considering* [Mexican] *an original language.*[947]

Because the "Eskimoes" were of "deformed stature" Caldwell cannot see them as the folk who crossed Bering straits and suggests an earlier people inhabited North America, actually people Barton discussed in his *Observations* as having arrived on the east coast.

At a meeting of the American Philosophical Society for 19 July 1799, Barton asked for time to prepare his essay on the Indians for publication early in the fall."[948] However, other activities intervened. He had prepared his *Collections* (1798) now that he was professor of that subject. In his unpublished "Journal of a trip up the Hudson, 1797"[949] he had recorded Indian tales, vocabularies, a comparison with De Laet's account, addenda to his *New Views*, and a table of some words in Sankikani, Delaware, and Mohican. He had evidently intended this Journal for publication and as the basis for his lecture before the Society.

Keeping account of sales to the new edition of *New Views*, Barton recorded:

> *March 31st. 98.—4, to Dobson.*
> *April 14. 983, to Ormand.*
> *August 10th. 98. sent—8 (new edition) to Mr. James Swords, through Mr. Dobson.*
> *August, ditto, sent 6 copies to Dobson, which he is to forward to his friend, in New York.*
> *August 11th, sent—4 copies to Mr. Swords, through Dobson.*
> *August 15th, sent 3 copies to Mr. Swords, to by the Stage from the Franklin, in 2d Street.*
> *August 30th, sent 3 copies to Mr. Swords, by Mr. McKensie from Germantown.*
> *Feb. 20th, 99. Sent to Mr. Humphries, 3d Str. two copies of N. Views to sell for me.*
> *March 2d, 1799. Sent to Mr. Dobson, Three copies of N. Views, 2d edition.*
> *January 6th, 1800. Sent to Mr. Dobson—3 copies.*
> *January 7th. sent to—ditto—4 copies.*[950]

Heckewelder and Indian Language

Barton had been working on a text for his medical pupils, his *Collections*, the preface of which he dated 12 March 1798. Heckewelder wrote from Bethlehem 9 April introducing Rev. Frederich Fruhauff who would carry his letter to Philadelphia. Writing that he was preparing a journey to the West, he confided: "Imagination has more than once pictured us together traversing the Western Wilderness, in search of Products of Nature." Barton must surely have reciprocated the wish while he marked the letter "answered." Even after the publication of the new edition of *New Views*, Barton and Heckewelder continued their correspondence. On 4 December 1798 Barton wrote:

> *Dear Sir: I have just heard of your safe arrival at Bethlehem. I wish you much happiness on the occasion. I send you 4 copies of the*

947 *Port Folio* 7 (1812): 507–526, quote on 522.
948 APS, "Minutes," 282.
949 Barton papers, APS.
950 Barton papers, APS.

new edition of my N Views which you will find pretty enlarged & corrected. I beg your acceptance of one of the copies, & wish you to give the other 3 to any persons you may think proper. In this case, I may, perhaps be able to get the old copies returned to me. I am still pursuing the subject.

I long to hear something concerning the journey you have taken.[951]

The four copies of the new edition evidently did not reach their destination. Years later Heckewelder deplored not having seen the new edition. Again Barton wrote 18 December that he had received a letter "which gave me great pleasure...the words copied by Bishop Ellison will be very acceptable. I entreat him not to forget me..." In a postscript: "In looking over the New Views, you will find Delaware words & the language of the Katahbas, and Indians of Virginia (I suppose Powhatan's of almost two hundred years ago.)"[952]

A welcome visitor from the Indian country brought a letter from Heckewelder dated in Bethlehem 12 April 1800. Rev. Christian Frederick Dencke was to accompany Heckewelder on another trip to the west. "His talents & turn appears to be directed towards Botany" wrote Heckewelder, sending a sieve made of roots, the sieve used constantly by the Indians for fifteen or twenty years. Heckewelder wrote of his planned move to Ohio near present Zanesville, to a settlement planned by the Bethlehem Mission Board for exiled Indians. Its name, Gnadenhütten, meant "Tents of Grace."[953]

The letter stimulated more queries from Barton, not only on Indian language, but on other topics he was currently pursuing: geography, goiter, and subjects suggested through his correspondence with his brother, Richard Peters Barton. He also expressed his sympathy for the current plight of the Indians:

It will, indeed, afford me real joy if, by your assistance the unhappy Indians of our country shall be brought to a better state. I shudder at the idea of their distruction or passage to the wretched condition into which so many of them have been brought by the vicious part of our countrymen. So your endeavours to convince the world, whether Christians or Philosophers, that the men of America [the Indians] *possessing intellectual powers of the highest kind, is capable of arriving at, and of enjoying, the blessings of civilized life. Adieu. Think of me and believe me, to be, with great sincerity and affections, Your friend, &c.*

Fav. by Mr. Denke[954]

Barton was pleased with Mr. Dencke[955] who promised to have qualifications for becoming a naturalist. Dencke soon arrived on assignment to Fairfield, Ontario. A correspondent also of Muhlenberg, his letters in German, he sent a meteorological map of 1-7 September 1800 from his new locality.

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951 Gilbert Collection, CPSP.

952 Bishop Ellison, not identified. Barton papers, APS.

953 Barton papers, APS.

954 Gilbert Collection, CPSP.

955 Christian Frederick Heinrich Dencke (Denke) (1775-1813), German Moravian missionary, b. in Bethlehem, taught botany and Latin in Nazareth Hall. He wrote letters in German to Muhlenberg as early as 1798. Muhlenberg wrote to Baldwin, 20 August 1811, that "from one of my old correspondents...I have received a promise of all Canada plants not to be found in our parts" (Darlington, *Baldwin*, 43-44). J. M. Maisch, *Proc. Amer. Philos. Soc.* 28 (1890): 94; *Amer. J. Pharm.* 80 (1908): 421; Wallace, *Heckewelder*, 373 and 405; Barnhart, "Barton," 37.

To another set of Barton's queries Heckewelder on 27 February 1801 provided information on the Six Nations, emphatically requesting that if Barton printed the content he would not mention Heckewelder as his source lest the Indians who had supplied the answers, and who do read, should learn of it.

Sometime between October 1795 and March 1796, and again in 1797, Barton had visits from the linguist, social philosopher, geographer, and geologist, Constantin-François Chassebouef, Comte de Volney (1757–1820)[956] who had travelled in Africa and Asia Minor and had described their political and social state as related to their geography and geology in his *Voyage en Syrie et en Égypte*... (Paris, 1787). A sympathizer at first with the French Revolution, imprisoned during the reign of terror, and hounded by disciples of Robespierre for his liberal views on religion, he remembered a visit and Franklin's enthusiasm for America in 1777. He sailed for America, arriving in Philadelphia 12 October 1795.

Volney spent three years travelling through the United States, visiting Monticello in the spring of 1796, then going by way of Staunton, Virginia, to Greenwood, now in West Virginia. He descended the Ohio River to Point Pleasant, turned back up river to revisit Gallipolis, thence to Lexington, Frankfort, and Louisville, Kentucky, and on to Vincennes on the Wabash. He returned by the same route to Cincinnati, then travelled north to Detroit, to Niagara Falls, and through the Mohawk Valley to Albany. He then sailed down the Hudson River to New York, reaching Philadelphia in November. The next year found him in New England, sometime later in Virginia. On 20 January 1797 he was elected a member of the American Philosophical Society.[957] On 10 April he received an invitation to visit Jefferson, and in July he regretted that Barton was not at home when he called.[958] In 1798 he returned to France, now under Napoleon, soon becoming professor of history at the École Normale Supérieure. He continued a correspondence with Jefferson until 1805.

Conversations with Barton had covered their subjects of common interest, and Barton gave him specimens from his Niagara Falls and Onondaga trip as well as notes on comparative Indian languages and specimens from his mineral cabinet. Once back in France Volney published *Tableau du Climat et Sol des États-Unis d'Amérique*... (Paris, 1803),[959] which was soon translated and edited as *A View of the Soil and Climate of the United States of America* (Philadelphia, 1804) by Charles Brockden Brown, Philadelphia Quaker and author. That Volney's account with its acknowledgements to Barton was well organized for the physical features of the northeastern states and the "western country" was its stamp of importance. Brown had consulted Barton "who has made the natural history part of America, and the manners and dialects of the aborigines, the objects of great and successful study. This gentleman's remarks are given in the form of additional notes." Barton was considerably more sympathetic in his estimates of Indian life and character than Volney.

In *Discourse* Barton accused Volney of not crediting him for some of his geological information, but Barton's observations, dating from his summer of 1785 with the Pennsylvania-Ohio Boundary Survey, had now become common knowledge. To Mitchill, Volney credited most of his geological information. Maclure in Paris may have contributed some help during the preparation of the book. But what really galled Barton

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956 John C. Greene in *DSB*, in *American Science*, 225–227; George W. White, Introduction to reprint of Volney, *A View of the Soil and Climate of the United States. Translated...by C. B. Brown*... (New York, 1968).

957 APS, "Minutes," 246.

958 Volney, Federal City, 15 Juillet 1797 to Barton. HSP.

959 Barton loaned his copy to Heckewelder, 4 March 1805. Volney presented Barton with a copy of his *Rapport...sur l'ouvrage russe de...Prof. Pallas, intitulé Vocabulaires comparés des langues de toute la terre* (Paris, 1806).

was that Volney's account had appeared before his own projected "Geographical View of the Trees and Shrubs of North America." Volney's geography had covered most of Barton's intended area, and scooped the market. Philadelphian Samuel Breck (1771-1862) remembered Volney as a "timid, peevish, sour-tempered man."[960] In reviewing Volney's *View of the Soil* Mitchill summed up this way: "Although we differ from him in some of his conclusions, candor obliges us to own that Mr. Volney possesses a happy talent for inquiry and observation."[961]

Heckewelder wrote from Gnadenhütten, 4th March. 1805:

> *I have to acknowledge the receipt of Volney, which, since I wrote last, came safe to hand—It is indeed a curious Book—I have begun to remark on some passages on his History of the Indians. How erroneous he sometimes remarks—It seems he got the greatest part of his information from Mr. Wells, & little Turtle, tho I believe he sometimes mistook them both—If he was not inclined to believe what Missionaries told him, who undoubtedly he ought to have credited above all, he could not have intended to have handed to the Public any authentic accounts—I know how much dependence is to be placed on Numbers, who pretend to know much of the Indians & know little or nothing, but make a kind of History of their own, of them—Had he quoted Genl. Gibson of Vincennes* [Indiana], *who, as he had been there some time, might have furnished him with real facts—The reasons he states why the Inds. build their Towns so scattering, is so erroneous, that they cannot be admitted—When I shall have made such remarks as I deem necessary, I shall send them with the Book for the perusal of Mr. Zeisberger—And Volney is much mistaken in the Indian languages. Mr. Zeisberger who is perfect in the Languages of the Lenni Lenape (or Del.) is so confident that this Language is the Root, or as he calls it 'Ein Mutter Sprassen' (the Mother Tongue) of Numbers of other Indian Languages the Miamis included—Perhaps he may furnish me with some specimens of his manuscript for a grammar in this language, whereby You will see how compleat the same is...*
>
> *I mentioned in a former letter that Business would not permit me to pay a Visit to my friends in the Atlantic States in Spring—Yet I hope in Summer or fall to find liesure. Believe me Dear Sir with much Esteem Your sincere friend &c*
>
> *John Heckewelder*[962]

When Heckewelder came to write his history of the Indian in 1819 he softened toward Volney and praised his work as "excellent."[963]

Col. John Gibson (1740-1822) mentioned in the letter was born in Lancaster, early learned German, and, from his Huguenot mother, French. He also learned Indian languages readily, particularly the Delaware. From July 1800-1816, appointed by Jefferson, he served as Secretary of Indiana Territory.[964] Barton acknowledged him as a source in *New Views*.

After several years involved in putting accumulated material on a number of subjects into print, much of it in his *Philadelphia Medical and Physical Journal*, where in volume

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960 Breck, *Recollections*, 198-199.
961 *Med. Repos.* 8 (1804) and 9 (1806).
962 Barton papers, APS.
963 Heckewelder, *Indian Nations*, 256.
964 Thomas D. McCormick in *DAB*.

one he included Heckewelder's meteorological records kept at Gnadenhütten 20 May to 20 October 1800, Barton once more plied his friend with questions. On 13 August 1808, besides asking for further information on Indian dogs, he inquired:

> 1. *What other Indians besides the Wyandots did the French call Humas? What is the import of the word Humas? Is it an Indian word? Do inquire.–*
> 2. *A specimen of the language of the Wyandots. Have they any labials, or lip-letters? Is not Minta their word for Red? The specimen, and your answers to these questions are particularly requested.–*
> 3. *I wish for Mr. Ziesberger's sentiments at large, concerning the idea, that the Monsey is the mother of all the Delaware language. Upon the whole, does the Monsey or the Unammech contain the greatest number of words that are monosyllables?*
> 4. *Is it possible for you to procure for me, a specimen of the dialect of the Unalachtigo? Even the following five or six words will be acceptable: viz. Fire, Water, Sun, Moon, Father, Mother.*
> 5. *Do endeavour to get from Mr. Denke, a good specimen of the language of those Chippewas among whom he resides. Such a specimen will be very acceptable to me: and Soon.*[965]

Barton read Heckewelder's "pretty copious" vocabulary at a meeting of the American Philosophical Society soon after. Heckewelder in his chapter on languages in his classic *Indian Nations* mentions Barton, but it was his closer friendships with Duponceau and Wistar who, after Barton's death, encouraged and facilitated Heckewelder's bringing together "the treasure-house of his experience." Heckewelder wrote to Wistar that he had withheld publication of his account of the Indian languages because he expected that Barton would put it into print.

Barton had long planned another edition of *New Views*. Duponceau, to whom Barton willed his manuscripts on Indian language, supplemented the words in 1821 with extensive interleaves and interlineation, giving additional sources and making a notebook of 221 pages, the manuscript now preserved at the American Philosophical society. He had intended to publish a revision of Barton's vocabularies.[966]

Jefferson and Indian Language

It was the President of the American Philosophical Society, however, who shared most closely Barton's interest in language. Jefferson wrote 1 March 1800 that he was "just now beginning to copy the Indian vocabularies lent him by Dr. Barton; but finds it necessary to know previously whether some of them may not already have been entered in the Vocabularies of Th. J. lent to Dr. B. he will therefore thank him for them & if Dr. B. has not made the uses of them which he wished, they shall be speedily sent back to him, with his own." On the 13th Jefferson returned Barton's vocabularies with many thanks for the use of them, and he sent his own, with friendly salutations.[967]

When Barton's *Discourse* appeared in 1807, it contained further facts and discussions of his sources of material. In his "Appendix" he elaborated on his differences

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965 "Exact copy," Barton papers, APS.

966 Freeman & Smith, *Manuscripts*, 219, item 1983.

967 Barton papers, APS.

with other writers, and with Jefferson, on the origin of the American Indian and language roots. Jefferson had speculated that since communication between Europe and America had long been known possible, the Indians might well have come from the east as well as from the west. The American Indian had more dialects and so may be older than the Asiatics, he suggested, and may have crossed the land bridge to the West.

Whenever the opportunity to collect vocabularies presented itself, Jefferson alerted Barton, as on 1 January 1806 when Indian chiefs were enroute from Washington to Philadelphia. "I snatch a moment from incessant business & interruption to inform you there are 4 Little Osages, 2 Missouris, 1 Kansa, 1 Otto, 2 Panis, 2 Ayowas, 1 Sioux, 2 Renards, 5 Sacs, 1 Pontewatami, with 2 interpreters who serve for the whole. Accept affectionate salutations." Barton reported on the interview in his *Philadelphia Medical and Physical Journal*."[968] That was an opportunity not to miss, for Henry M. Gray informed him from Jerusalem Mills, Maryland, 8 April 1807, "There is not a real Indian remaining of the Nottoway tribe—The old woman from whom I got the Specimen of language, sent, is the nearest of blood—She tells me the Nottoways were able to converse with the Tuscaroras & Potawatamies."[969]

Barton had summed up his continuing interest in languages in a letter to Lacépède in 1805:

> *Since the publication of my New Views, I have made great progress in collecting and comparing the languages of Europe and Asia. Every step I take only serves to confirm me in my former opinion, that the (known) radical languages of North America are very few in number, and that all the Americans are of Asiatic origin. I have lately received from Mexico an inestimable treasure,—a collection of a number of vocabularies of the old Mexican dialects. Between these and the dialects of Asia I find great affinities, sufficient to convince me that the Mexican nations (contrary to the paradox of Camper) are not of European origin; much more than sufficient to excite in me the greatest surprise that the learned abbé Clavigero, after liesurely comparing the Mexican languages with those of the old world, should have found no affinity between them. The affinities, I repeat it, are very great.*"[970]

The "inestimable treasure" from Mexico may well have been received from Antonio del Rio whose letter is not with Barton's papers, but whose account of Palenque Barton sent to Good in England. In the following to Jefferson, Barton announced that he had in press a new edition of *New Views*, though that was not to appear: there was not a large enough public interested. He then told of the new book del Río had sent him:

> *Philadelphia September 14th 1809*
>
> *Sir*
>
> *I have, at this time, in the press a new edition of my work on the dialects of the American Indians. This edition will be, in many respects, much more correct and satisfactory, as well as more ample, than the former, which you have seen. I am extremely anxious to possess specimens, no matter how small, of the languages which Mr. Lewis met with beyond the Mississippi. I will think myself much satisfied and honoured, if you will transmit to me, as early as your*

968 *PMPJ* 2 (1806): Pt. 2: 190.
969 Barton papers, APS.
970 *Philos. Mag.* 22 (1805): 209.

> *convenience may suit, such specimens. I do not ask, or wish for, copies of the entire vocabularies; but only a good selection of about ten or twelve words, from each of them. I need not tell you what words those should be.–I am less anxious about the languages of the Osages, as I have a tolerable specimen of this, of the Mandan, I have only 4 or 5 words. Of the Pawnees, not one, upon which I would wish to depend–I shall not fail to make a public acknowledgement of the sources from which I receive words.*

Then Barton told of the new work on Mexico, which he hoped to present to the reading public:

> *You will I think be pleased to hear that I have received from Mexico, a very important pamphlet on the astronomy of the ancient Mexicans. It is not a fanciful work, such as an ingenious man might write in his closet from the traditions of Indians or the vague facts and reports of others. It is truly historical, and is principally founded upon the discovery of the 'Mexican Century' a vast stone monument, which was discovered in Mexico, in the year 1790. The work is written by one Gama,*[971] *a man of real learning; and will serve to overturn many an ingenious theory, the work of such historians and writers as Robertson and DePauw, &c. The pamphlet is now in the hands of a friend of mine, who is translating it, with great care. I intend to publish it in English, but where, or in what shape, I know not. Whenever the translation shall be finished, I shall, if you wish it, send you the original Spanish, for your perusal. I am, Sir, with very good respect, Your obedient & Humble Servant, &c. B.S. Barton*
>
> *exact copy.*[972]

The pamphlet on the astronomy of the Mayas, received from Antonio del Río, a Spanish artillery officer who had visited the ruins of Palenque in 1787, was an early report of the discovery of an astronomical stone calendar. The pamphlet may have been carried from Mexico City by visiting Spanish Governor Gonzales, who was persuaded by Barton to make, or to oversee, a translation.

Sadly Jefferson replied from Monticello, 21 September 1809: "[I] would with all possible pleasure have communicated to you any part or the whole of the Indian vocabularies which I had collected, but an irreparable misfortune has deprived me of them." The trunk containing his thirty years of collecting about fifty vocabularies had been stolen enroute from Washington on his leaving office. The thief, disappointed at the contents, threw the papers into the James River. Only a few leaves floated ashore and were rescued. The "only morsel" of an original vocabulary was Lewis's Pani language, "& a little fragment of some other which I see is in his handwriting but no indication remains on it what language it is." Jefferson also mourned the loss of his Russian vocabularies.[973]

"If it be antient & genuine, or modern & rational, it will be of real value," but Jefferson would not trust the Mexican pamphlet on Palenque "to the accidents of the post." He will welcome a copy of it after publication of the translation. Jefferson and

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971 Antonio de León y Gama (1735–1802), *Descripción Histórica y Cronológica de las dos Piedras...en la Plaza Principal de México, se hallaron en ella el Año de 1790* (Mexico City, 1792) is mentioned in Barton's account of Palenque.

972 Barton papers, APS. Jefferson replied on September 21, 1789; Merrill D. Peterson, ed., *Thomas Jefferson: Writings: Autobiography...* (New York, 1984).

973 Reproduced in full in Jackson, *Lewis and Clark*, 465–466.

Barton were both to be disappointed in the lack of interest shown at this time in England for this early Latin American record. Barton had learned from the limited interest in *New Views*, and other papers, that he would not find financial support for the publication of Gama's pamphlet on Palenque in the United States. Barton had also announced with anticipation to Rev. Abiel Holmes of the First Congregational Church in Cambridge in 1809 that "I have now in press a new edition of my very imperfect work on Indian dialects."[974]

While he was in England, on 10 July 1814 Barton submitted his last work on the affinities between American and Asiatic languages, his "Some account of the *Tantalus Ephouskyca*," which was read before the Linnean Society in London 6 June 1815, and was published in 1818 with a drawing erroneously said to be by William Bartram, who had first seen and reported the bird.

Palenque

Shortly after writing Jefferson 14 September 1809 about his receipt of Antonio de León y Gama's *Descripción Historica*, Barton sent the pamphlet, a letter from Captain Antonio del Río, who had visited the Mayan ruins of Palenque in Mexico in 1787, and his own comments to Dr. John Mason Good of the Royal Society in London for publication. Good already had Barton's essay on the potato, *Solanum tuberosum*, for which Barton had requested the return of the original since he had not taken time to make a copy. Likewise he had not made copies of the translation of Gama's pamphlet, del Ríos's letter, or his own comments. Not having heard from Good, Barton wrote again, and Good replied that the essay had been published, but did not identify the journal or date.[975]

Gama's paper was about the carved stones, one a calendar that had been buried by the Mexicans in 1521 on the approach of the Spaniards and unearthed in 1790. The *calendario* weighed about fifty tons and had carved upon it symbols of the Mexicans' astronomical system, which had been found described in manuscripts. Gama had included an essay on the astronomical system of the ancient Mexicans, an aid to the understanding of the *calendarium* of Palenque.[976]

The ruins of Palenque had first been discovered by Spaniards in the middle of the eighteenth century. In about 1773 Ramon Ordoñez y Aguiar organized a visit to the ruins about which he had heard from a schoolmate as having been discovered about 1746.[977] Ordoñez left a manuscript on the ruins of Palenque written in 1784. Del Río's "original manuscript report, dated 24 June 1787, of the Ruins of an ancient city, discovered near Palenque" was "translated" by Paul Felix Cabrera and published in London, in 1822.[978]

Del Rio's letter and the book by Gama had so enthralled Barton that he wrote to Alexander Tilloch, editor of *Philosophical Magazine*, sending later corroboration he had received from the *Intendente* in Puerto Rico, a recent resident of Guatemala, Allesandro

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974 Barton papers, APS.

975 Barton Papers, APS.

976 Antonio León y Gama's work was criticized by Don José Antonio Alzate y Ramirez in *Gazetade Literatura* in 1792 for his conclusions (Sabin, *Dictionary*, 40059). Neither Gama's book, Barton's translation, nor del Rio's letter have been located by us.

977 Ignacio Bernal, *History of Mexican Archaeology* (London & New York, 1980), 87; David M. Pendergast, "Palenque," *The Walder-Cody Expedition to the ancient Maya City* (1839-40) (Norman, Okla., 1967), 5.

978 *Description of the Ruins of an Ancient City...from the Report of Don Antonio del Río* (London, 1822). The first published account of Palenque had been by Domingo Juarros, *Compendio de la Historia de la Ciudad de Guatemala* (Guatemala City, 1808-1818), its English translation, *A Statistical and Commercial History of the Kingdom of Guatemala in Spanish America*, translated by J. Bailey (London, 1823). See Sabin, *Dictionary*, 71446 under "Rio" for details. Del Rio's original had lain in provincial archives of Guatemala. See Frederick Albion Ober, *Travels in Mexico* (Boston, 1884), 159-171 with illustrations. Had Cabrera seen the translation made for Barton?

Ramirez.[979] Barton's letter to Tilloch, in the hand of an amanuensis with a few additions and corrections by Barton, and dated by him, March 1813, reads:

Dear Sir,

A considerable time since, I transmitted to my learned friend Mr. John Mason Good, some notices concerning the discovery of the remains of ancient cities in the southern parts of North-America, at a place called Palenque. My information concerning, those monuments of an early civilization in this part of the New-world, was derived from an intelligent Spanish Governor, who during his residence in Philadelphia, in 1810, permitted me to inspect his numerous drawings and manuscript descriptions of the cities in question. Mr. Good informed me, that the memorandums contained in my letter, had excited some attention; and that he has published them in one of your Journals, or Magazines. I have never seen the printed account, and cannot lay my hands upon a copy of my original letter, otherwise it should be sent to you, along with this.*

I have never, for a moment, doubted the correctness of the information which I derived from Mr. Gonsalez, the Spanish Governor: because, among other reasons, we Americans have discovered abundant proofs, in many parts of the continent, as well north as south, of the existence, at some remote period, or periods, of numerous nations of men, who had made very considerable advances in the elegant as well as useful arts, and even in science and civilization. But any doubts which I might have entertained upon this most interesting subject, would have been entirely removed by the recent receipt of a letter from a much respected friend, Mr. Alexander Ramirez, who has resided for a long time in Guatemala, and who has lately been appointed Intendente in the Island of Porto-Rico. I subjoin an extract from the letter of Mr. Ramirez, which is dated Havana, January 2nd, 1813. How much this gentleman, with whom I have the pleasure to be personally acquainted, is respected by his countrymen, will appear evident from the circumstances of his having been lately charged by the Spanish Cortez with the important business of establishing an Economical Society in Porto-Rico: a society from which much important information may be expected.

'From Guatemala to Campeache (says Mr. Ramirez) I could not pass without making an excursion, which I much longed for, to the American antiquities of Palenque. You, no doubt, have heard of them. They are truly remarkable. The great antiquity of America is demonstrated by these singular monuments, the work of a people by far much more advanced in arts than the Mexicans or Peruvians, when first seen by the Europeans. I sent my information to my newly re-established Society of Guatemala, as those venerable fragments are found in the Province of Chiapa, belonging to that Kingdom, though in the vicinity of that of Yucatan, or Campeache. Several manuscript drawings and descriptions, made these last twenty years, are there collected: and the whole, I expect, is to be soon printed by the said Society, of which I will send you a copy.' It is, perhaps, too soon for any one, it may be altogether a vain attempt in me, to inquire, by

979 Alejandro Ramirez, an early correspondent of Barton's and member of the APS since January 1801.

whom, or at what time, the Palenque cities were erected? In my letter to Mr. Good, I had no hesitation in saying, that they were the work of a people not specifically, I mean not essentially different, in physical character from the Mexicans, the Peruvians, and other American nations, with whom we have been long acquainted. This I infered, and still infer, with confidence, from the physiognomy and costume of the figures of human objects, of which the drawings of Mr. Gonsalez exhibited representations. I am aware, that Baron Humboldt, in alluding to the same figures, or to very similar ones, remarkable for the size of the nose and the elongation of the forehead, seems to consider them as proofs of the existence, in America, of a race of very ancient people, who must have been different from the other Americans. But I cannot view the subject in this light. Indeed, as to the elongated or conical forehead, this was taken notice of as a feature of the people of Tula in Florida, by the historians of the famous march, or rather ramble, of Fernando de Soto and his successor, through Carolina, Georgia, and Florida between the years 1539 and 1543. And Tula, it may be worth observing, is unquestionably, a Toltecan, or Mexican name. Clavigero observes that the Toltecan founded a city, not many miles from the spot on which afterwards the city of Mexico was built by the Aztecas which they called Tollen or Tula, 'after the name of their native country.'

The following is a part of Garcilasso de la Vega's account of the people of Tula in Florida. 'Les homenes de la Province de Tula, aussi bien que les femmes sont tres-difforme's Il ut la late longue et pontue extraordinairement, et ou la leur forme de incetteire manière des le moment de leur naissance jusqu'a l'age de neuf a dix ans.'[980] *No doubt, the long and pointed heads of the people of Tula, as well as of the people whose figures are represented upon the ancient monuments of Palenque, were thus moulded by an early and strong pressure applied to the heads of the children. Naturalists should be always to careful to distinguish accidental or artificial forms from those which nature herself has impressed, as specific and permanent characters.*

From a variety of circumstances I have been led to conjecture, that the ancient cities of Palenque were constructed by the Toltecas, or Toultecks; whom I have just mentioned; the most ancient and cultivated race of men in America, of whom many memorials are preserved. From Clavigero and other Mexican historians, you will learn, that these toltecas preceded the Mexicans in their emigration from the north to the south; that from them the Mexicans learned the elegant arts of cutting precious stones, of casting and working in metals, &c: and, what is of more importance, that the people whom H. Cortes found under the dominion of Montezuma, received their astronomical knowledge, and the whole genius of their calendar, from the Toltecas.

I well know, that certain writers, who have learned no more of the history of America than what they glean from the elegant, but entirely superficial and incorrect work of the late Principal Robertson,[981] *will*

980 *Histoire de la Conquête de la Floride, & c.* (Leiden, 1731), Tom. 2, p. 410.

981 William Robertson, Principal of the University of Edinburgh, whose *History of America* pupil Barton had derided in his *Observations* (1787). Robertson contains a large folding map depicting drawings taken from native American codices. Cornelius (Corneille) de Pauw (1739–1799), *Recherches philosophiques sur les*

smile at the idea of there having been any thing like a systematic or accurate astronomy among the ancient Americans: and that they may even think it prudent to doubt of the existence of such a people as the Toltecas. But the Toltecas did as certainly exist as did the Macedonians in the time of Alexander. Nay, some important circumstances in their history have been fully verified, an astronomical principle by the learned Mr. Gama of Mexico, in a work which seems to be wholly unknown in Britain, but which I have in my library, and of which I have caused a translation to be made. The times were not peculiarly favourable to the publication of the work: and I know not, that the taste of my native country would encourage it. It is a work, however, which is of the first importance in the view of American history; and the entire loss of which, or at least of the singular monuments which it describes, would form a vast and solemn blank, extremely favourable to the longer existence of the reputation of certain historians of America.

The empire of the Toltecas terminated about the year 1052, that is 440 years before the discovery of America by Columbus; 467 years before the arrival of Cortes in Mexico, and 118 years before the pretended settlement of a Welsh colony in the new-world! But the history of the Toltecas ascends to a much earlier period than the middle of the eleventh century. They began their emigration, from the north, about the year 596 of the Christian era: so that they preceded the Aztecas, or proper Mexicans, in their first emigration from Aztlan, about 564 years. For according to the Mexican annals, the Aztecas departed from Aztlan about the year 1160.

I do not mean to assert, that all these dates can be implicitly relied upon. But some of them have been verified by Mr. Gama, and other learned men: and in other instances, if I do not greatly mistake, the chronology of the Toultecks and Mexicans is more to be depended upon, than much of the better Chronology of Herodotus.

That the Toltecas were nearly related to the Mexicans by their genius, by their general physical features, by their costumes, &c., there is no good reason to doubt. But I cannot, without some hesitation, agree with Mr. Humboldt, that Clavigero has proved, that the language of the Toltecas and that of the Mexicans were the same. I think that he has not proved any such thing. And, indeed, when we consider how long the Toltecas and Mexicans were separated from each other, we may perhaps, very safely assert, that these two great American nations did not speak the same dialect. Languages radically the same, I am quite willing to believe they did speak. For I think I have shown in my New Views, in opposition to the opinion of Mr. Jefferson and other learned men, that the radical languages of North-America are but few in number.

'During the four centuries (says Clavigero) that the monarchy of the Toltecans lasted, they multiplied considerably, extending their population every way in numbers and large cities; but the direful calamites which happened to them in the first years of the reign of Topiltzin, gave a fatal shock to their prosperity and power. For several

Américains, ou Mémoires intéressants pour servir à l'histoire de l'espèce humaine (Berlin, 1768), with Buffon, was a source for Robertson. Robertson's interpretations were largely displaced by later scholars, Humboldt and Barton among them.

years heaven denied them the necessary showers to their fields, and the earth the fruits which supported them. The air, infected with mortal contagion, filled daily the graves with the dead, and the minds of those surviving with consternation, at the destruction of their countrymen. A great part of the nation died by famine and sickness. Topiltzin departed life in the second year Tespatl, the twentieth of his reign, which was probably the year 1052 of the vulgar era, and with him the Toltecan monarchy concluded. The wretched remains of the nation, willing to save themselves from the common calamity, sought timely relief to their misfortunes, in other countries. Some directed their course to Onchualco or Yucatan, some to Guatemala, while some families stopped in the Kingdom of Tula, and scattered themselves in the great vale where Mexico was afterwards founded; some in Cholula, Tlaximaloyan and other places; and amongst these were the two princes, sons of king Topiltzin, whose descendants, in course of time, intermarried with the royal families of Mexico, Tezcuco; and Colhuacan.'[982]

It seems to be generally admitted by the American historians, that the Toltecas constructed the great pyramid of Cholula, of which Clavigero, Humboldt, and other writers have favored us with a descriptions and histories. Clavigero thinks it probable, that they likewise built the famous pyramids of Teotihuacan in honour of the sun and moon, which are still in existence, though much disfigured.

But we must be careful not to ascribe every American monument of antiquity to the Toltecas. The monuments of an ancient improvement in the arts; the vestiges of a people far more cultivated than the greater number of the American Indians; and, in particular the monuments of a people who must have been extremely numerous, are scattered over an immense portion of North-America. They are particularly abundant in the modern States of Tennessee, Kentucky, Ohio, and the neighbouring territories.

The real nature of these monuments to which I allude, is little understood in Europe. They are earthen fortifications of different forms, and some of them of immense extent. Plans of many of these are in my possession; and an accurate plan of one of the most considerable of them, I published in London, in 1787.[983] *Besides these fortifications, we find innumerable smaller tumuli, or barrows; and teocalli, or pyramidical mounds, of vast magnitude, constructed upon the same general principles or models as those of Anahuac, and I have no doubt, intended for the same purposes with these last. Some of the teocalli, of which thousands have already been discovered within the limits of the United-States, are surrounded by one or more walls, in this respect also agreeing with those of Mexico. Such is the structure of the teocalli at Muskingum, particularly laid down in my earliest work of 1787: and I now find, that the greatest of all the teocalli yet discovered, within the limits of the United-States, that of Grave-Creek in the State of Pennsylvania, near the river Ohio, was in like manner, surrounded by walls. Stone-walls have likewise been discovered in the State of Tennessee; and many of the teocalli in the same most*

982 Clavigero's *History of Mexico. English translation.* vol. 1. p. 89 (London, 1787). [Barton once owned a copy.]

983 Barton, *Observations*, a folding plate following p. 30.

interesting tract of country (which has recently supplied us with the remains of an immense species of Megatherium, specifically distinct from that described and figured by Cuvier and Garriga)[984] *appear to have been partly formed of burnt brick. The ancient inhabitants of Tennessee appear also to have been acquainted with the art of mummyfying human bodies: since cadavera, in a state of high preservation, have been found in that country; and specimens of one of them are in my possession.*

It would not be right, I say, to suppose, that all these works had been erected by the Toltecas. And yet, it is not improbable, that branches which separated from the main great bodies of the Toltecas and Mexicans, in their migration from the north-west, and which moved eastward, may have constructed not a few of singular works which I have mentioned. This opinion, it will be readily allowed, is much more probable than the hypothesis of one of the British reviewers of my work, who imagined, that the earthen mound, or teocalli, at Grave-Creek, was the work of some species of American Termites!! No doubt, that of Cholula had a similar origin!!!

One thing seems very certain,—and it is a fact which the naturalist will deem highly interesting,—that all the monuments of American labors and ingenuity, which have hitherto been discovered, whether those of Peru, or Palenque, of Tennessee, or of Marrietta, in the State of Ohio,—that they all bespeak a common original. In the midst of these remains, we have discovered many images (idols no doubt), cut in different kinds of stones, of very different degree of hardness. These images uniformly represent one species, I was going to say, one variety of men. Everywhere, the American [Indian] *(or rather I would say the Asiatic) face and features are seen. Neither the African (I mean the true Ethiopian) nor the European are ever to be met. From all these circumstances, I confidently infer, that the new-world, as we call it, from its first population to the period of the great discovery of Columbus, had been almost exclusively inhabited by a race of men not essentially different in their physical features, and often even agreeing in the costume of their hair, and other dress, from those whom we now call Indians. This fact is a polar star, as it were, which guides us, with safety through the long night of American history. If some of the American monuments seem to bespeak an Egyptian or Tuscan original, let it be remembered, that idols with Egyptian or Tuscan faces have never yet been found in any portion of America. Sometimes, we may meet with the Caucasian face, sculptured upon stone: and nations of the Caucasian stem (I mean Indian nations) do still exist in different parts of America, especially perhaps North-America, as I hope to prove to the satisfaction of every naturalist, in my 'Series of Indian Heads'*[985] *now engraving in Philadelphia, by an eminent artist. I am, Sir, with much regard, Your obedient, &c. Benjamin Smith Barton. Philadelphia, March, 1813.*[986]

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984 Garriga possibly misremembered. Gautier had been an artist for Cuvier, *Recherches*.

985 Barton in his last days willed proofs of Delaware, Chickasaw, and Osage Indian heads to Cuvier.

986 Barton papers, APS.

Although Tilloch may not have responded, he published Barton's paper on "Meteoric Stones" in 1815. Del Río's account of 1787 was the most important of the early investigations of Palenque. His original manuscript, or a copy, is now in the Academia Real de Historia in Madrid. Copies of the drawings made by Almendariz for del Río are in the Bibhoteca de Palacio, Madrid. Del Río's work was a useful description of the country, of its natural beauties, wild fruits (sapotes, avocados, camotes, yuca or cassava, and plantains).[987] How much of this had del Río sent with his letter to Barton? Samuel F. Haven wrote appreciatively of Barton's work in his history of archaeology.[988]

Drayton

Barton continued his quest for Indian words, now particularly in South Carolina. John Drayton (1767-1882),[989] born near Charleston and educated in England, was a two-term governor of South Carolina. He sent a copy of his *A View of South Carolina as respects her natural and civil concerns* (Charleston, S.C., 1802), reasonably patterned after Jefferson's *Notes on the State of Virginia*, to Barton in September 1803 to be presented to the American Philosophical Society in his name. In a letter of 22 June 1803 Barton had written that he had seen a copy and that he valued Drayton's work, but that he knows very little of the Katawba language. He hopes for specimens of Congaree, "Wasaw"—Washa?—, and Sewee vocabularies, all little known languages, and that he wished to include them in a supplement to a new edition of *New Views*. In answer, 2 September 1803, as a token of his pleasure from his reading *Elements*, which had recently appeared, Drayton sent Barton olives (*Olea europaea*) grown in South Carolina—the pioneer effort. He wished Barton would visit Carolina to see for himself how slaves are treated and how indispensable they were to rice culture. He disagreed with Barton that the dandelion and sweet vernal grass are European immigrants, and asked for Barton's arguments on the subject. "I have made out vocabularies; and sent them to two gentlemen, near the Catawba nation; and hope I shall be enabled in consequence to transmit you specimens in their language. Should I fail however from these quarters, it is very probable I shall see some of the Catawba in December next during the session of the legislature; and I will then be enabled to give you a vocabulary myself."

On 9 September Gov. Drayton again wrote Barton:

> *I am very happy that it is in my power, earlier indeed than expected, to meet your wishes respecting a Catawba Vocabulary. You will find it compleately answered; except as relates to God, Heaven & Virgin, for which my friend writes me, they have no names. The Gentleman who has executed this commision for me, resides within a mile & a half of the Catawba nations; & is considered & respected by them as one of their warmest protectors—He is a member of our legis. & possesses a clear head & good heart: being also a man particular in transacting business. So you may place the utmost confidence, in the Catawba words which he has written opposite the English ones. He writes me that he found much dific. in spelling them according to the true pronunciation. His spelling must be considered in the true English way: for example a is pronounced as in pay: where it is intended*

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987 Paz Cabello Carro in *Revista Arqueol.* (June 1984). Our thanks to George E. Stuart of the National Geographic Society for notes on the history of Palenque. He produced a summary of Palenque investigations in "The Beginning of Maya Hieroglyphic Study: Contributions of Constantine S. Rafinesque and James H. McCulloh, Jr.," *Res. Rep. Center Maya Res.* 29 (1989): 11-28.

988 Samuel F. Haven, in *Smithsonian Contr. Knowl.* 9 (1856): 26 and 30.

989 James H. Easterby and Dumas Malone in *DAB*.

> *to be broad, u, or an h is put after; as in au, ah. The E is pronounced as in Lee; the I as in lie. I know the Indian perfectly well who gave him the information; he is now one of their old men; and learned to write and read in Wm and Mary College in Virginia. He is also a decent man, discreet and sensible.*

The Indian had also been a source of information for Drayton's *View of South Carolina*. Drayton continued:

> *The Gentleman gives me word, he is sorry it is not in his power to give some account of their antient customs & religions: as they might assist in leading to their origins. But he says if ever they had a common law, it is entirely lost; and their religion likewise. Nettles (who is the Indian above referred to) says, by what he remembers to hear from their old men, they always believed the Sun to be God; that they made offerings to it: sacrificing young Does, before they had fawns.—This is all the information which could be obtained for you.—They have forgotten their antient rites, ceremonies & manufactures: & by their connexions with the whites, assume much of their manner & mode of living; and by easy progression; are altering the very colour of their persons.*
>
> *I request if you publish your supplement to your Indian Origin, by subscription, you will put my name down for two copies. And my friend is so anxious to see your work on the subject (which I cannot spare him): that if you can forward me one for him we shall both be obliged to you. His name is John W. Clenahan.*[990]

Drayton sent a *Hibiscus* that he had collected, "two others grow in the rice lands." He has found only three of the species mentioned by Walter, *Flora Caroliniana*. He closed this letter to Barton with "I must apologize to you, for this long letter: but on subjects like these, when I have time, I take pleasure to dwell. They cause no irritation between opposing sentiments: but on the contrary, settle down the mind to calm contemplation."

The next year, 11 February, Drayton sent "a Catawba Vocabulary, procured for me, & set to music to suit the pronunciation of the words in an ingenious manner, by my friend Co. Senf:"[991] who has the direction of the Federal public works now erecting at Rocky Mount." Drayton also enclosed a small collection of words from "The Onetda" language "which the Col. has procured from his Indian servant of that nation."[992] The Indian vocabularies from Drayton were probably among those willed by Barton in 1815 to the care of Duponceau for the Antiquarian Society of New England.

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990 Letterbook, p. 60, HSP. Clenahan, unidentified.

991 Possibly John Christian Senf, engineer of the Santee Canal 1780s-1790s, mentioned in Brunhouse, "Ramsey," 136n, 149n.

992 Letterbook, p. 61, HSP.

Rafinesque

Constantina S. Rafinesque's panoply of interests also included Indian archaeology and languages. Among Barton's papers, and dated in his hand "received December 1804," is a two-page manuscript entitled "A short vocabulary of the Osage's language." Rafinesque had applied to Jefferson for consideration as botanist to accompany the Dunbar-Hunter Expedition to the Red River in 1805.[993] Can this manuscript be related to Rafinesque's efforts and have been passed on by Jefferson to Barton? Jefferson received Rafinesque's application on 22 November 1804, and had acceded 15 December, promising "expenses only with little other compensation." Rafinesque, however, meanwhile had sailed for Italy to be away from this country for ten years.

In this *Life of Travels*, 76, Rafinesque mentioned that he had induced the United States Commissioner of Indian Affairs, Thomas L. McKenney, to print circulars that would encourage the collecting of Indian vocabularies of one hundred basic words. Having read del Rio and Cabrera's account of Palenque as published in London in 1822, Rafinesque wrote to Duponceau on New Year's Day 1827, detailing his criticism and suggesting a Libyan source. His letter appeared in the *Saturday Evening Post* 13 January 1827.[994]

Nuttall and Indian languages

When Barton employed Pursh and Nuttall as collectors, data on Indians was particularly specified. Pursh seems to have come naturally to his mentor's attitude toward the natives, an empathy with those of the agricultural tribes of the East with whom he came in contact. Nuttall, contrariwise, who met the native in his own buffalo-Indian-pony environment on the high plains, was never at ease with the Redmen he encountered. True, they were at that time more actively engaged in discouraging the Europeans' encroachment into their territory. Although the Indians called Nuttall "the pale-face medicine-man," certainly because of his digging roots and testing the berries presented to him, and although on more than one occasion they saved his life when his botanizing overcame his caution, he has given the impression in letters and the published record that he was influenced more by their depredations and savagery.

With a stop in Detroit in his plans for Nuttall, Barton had alerted Augustus Woodward, once a visitor to Philadelphia, who wrote Barton 29 June 1810:

> *He mentions to me that you are desirous of making some investigation into the Wyandot language. I think it will reward your labor. The verb of this language is a great literary curiosity. Like the Greek language it has the dual number, as well as the singular and the plural, through all the moods and tenses, the imperative and infinitive excepted. It has also two aorists, and three futures; and having in the whole nine tenses. It's substantive is inflexible; so that almost the whole of the language is comprized in a complete knowledge of the verb. In some of the other aboriginal languages the verb is susceptible in gender, somewhat in the manner of the Hebrew; and the first and second persons have gender, which is so unusual in languages. There*

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993 Jackson, *Lewis and Clark*, 217-218, reproduces the letter.

994 Rafinesque's letter is reproduced in G. E. Stuart, "The Beginning of Maya Hieroglyphic Study: Contributions of Constantine S. Rafinesque and James H. McCulloch, Jr." *Res. Rep. Center Maya Res.* 29 (1989): 11-28, illus.

> *are nearly a thousand verbs in the Wyandot language; while the number of substantives is much less.*"[995]

Augustus Brevoort Woodward (1774–1827),[996] lawyer with many interests, born in New York City and a graduate of Columbia College in 1793, had been appointed by Jefferson in February 1805 as one of three judges for Michigan Territory and moved to Detroit. Nuttall, however, on shipboard bypassed Detroit.

Barton had itemized the kinds of information about the tribes Nuttall would encounter in the information he provided him before he set out for the "Northwest" in 1810. For example, Barton detailed that:

> *From Chicago, unless you should see substantial reasons to deter you from this rout, take your course, nearly northward, along the lake to lat. 44°. Here I wish you to turn to the westward, towards and among the Winnebagoes, of whose language, customs, &c., I am greatly desirous to receive information. You will, doubtless, find many curious plants here. I presume a residence of fifteen or twenty days, among and near the Winnebagoes, will be highly profitable. Of these Indians, we know very little, except from Capt. Carver. Their traditions. Did they come from the south or south-west? As soon as possible, send me a good specimen of their language.*"[997]

Nuttall's interest in Indian lore, recorded in many instances in his published journal, *Travels in Arkansas*,"[998] with its appendix summarizing his observations and opinions, may certainly be traced to Barton's instructions and influence, although Nuttall never acknowledged having read Barton's *New Views* for facts or theories he deigned to comment on. In Chapter XIII of his *Travels*, where Nuttall espouses the Asiatic origin of the American Indian, he makes no reference to Barton's detailed appraisal or its merit.

Writing to Langsdorff in April 1810, Barton told him of outfitting Nuttall for "an expedition of natural history" northward. The great object was the collection of facts, for botanical and zoological works, and also for an extensive work on the languages of the Indian nations:

> *I already possess specimens of the dialects of at least one hundred eighty American languages, not one of which has a place in the valuable Vocabularia Comparativa of Pallas.*"[999] *But I must inform you, that I have discovered great and unequivocal affinities between the American languages and those of Northern Asia; and even between the former and the languages that are spoken on and near the Caucasus. America did not receive its inhabitants merely from the Eastern border of Asia, as some writers have imagined. Numerous hordes came in from the borders of the Caspian, and other more Southern parts of Asia; and my inquiries render it possible, that this was the most ancient population of America.*

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995 Barton papers, APS.

996 Wm. L. Jenks in *DAB*.

997 Pennell, "Nuttall," 47.

998 Thomas Nuttall, *A Journal of Travels into the Arkansas Territory during the Year 1819*, Savoie Lottinville, editor (Norman, Okla., 1980).

999 Pallas, *Comparative Lexicons*.

Indian Remedies and Plant Uses

In *Discourse* Barton wrote "Our Indians are in possession of many useful medicines. However imperfect the state of medicine among these people...we may derive essential advantages by studying the history of medicine among the Indians...wretched and shackled the state of medicine itself, if we refused to receive medicines from a people because they were incapable of teaching us the whole nature of their remedies..."[1000] He had been interested in Indian life even before his visit to an Indian settlement on Beaver River near the Pennsylvania-Ohio border in 1785.

Over the years Barton's opinions of the efficacy of much medical lore was tempered. In *Collections* he explained that he had wished "to turn the attention of our physicians to an investigation of the properties of their native productions," and he referred to the several theses on native plants written by his own medical pupils. Through experiment and experience he concluded that much useful information came from the Indians, but that among them "the art of medicine is truly in a shapeless and an embryo state." The Indians were acquainted only with the general medical properties.[1001]

The following pages are but a sample of Barton's sources and examples of native plans as treated in his *Collections*, delivered as a speech before the Philadelphia Medical Society, 1 February; and *Collections*, ed. 1, part 2.

One of Barton's earliest sources of information on the Indians was William Bartram. In an undated memorandum "plants cultivated by the Indians,"[1002] Barton noted "William Bartram informs me that when he was among the Creeks, these Indians cultivated the Helianthus annuus both in their corn fields & their little lots in the towns. They make bread of the seeds, by mixing about a 3d of the seed with Indian corn flower & making it into cakes." Bartram makes no mention of the cultivated sunflower in his *Travels*.[1003] More currently Charles Heiser also found the mixture made a very palatable bread for the Choctaw Indians.[1004]

From several sources Barton found records of the many Indian uses of the sunflower: from Captain John Smith, *The General Historie of Virginia, New England, and the Summer Isles* (London, 1624), or from someone who quoted him; from John Bartram's notes on his journey to northern New York; and from Peter Kalm's travels into Quebec in 1750.[1005]

> *The Helianthus annuus was found in a cultivated state in many parts of North America, when these countries were first discovered by the Europeans. But I know not any one pretended to have observed it growing spontaneously. It was cultivated, and is still cultivated, by the Creeks and other Southern nations of Indians. It was cultivated by the*

1000 *Discourse*, 44–45. Eric Stone, *Medicine among the American Indians* (New York, 1932, Hafner reprint, 1962), construes the subject in nine chapters. However, Stone mangles botanical names, sometimes to unrecognition. Errors of fact are too prevalent, e.g., *Magnolia macrophylla* Michx., umbrella or bigleaf magnolia, from the American Southeast, is said to be used by the plains Indians (p. 49, etc.). W. N. Fenton elaborates on Rush's and Zeisberger's contribution to the study of Indian plant remedies, in "Contacts between Iroquois herbalism and colonial medicine," *Smithsonian Inst. Annual Rep.* (1941) 503–526.

1001 *Collections*, ed. 1, part 2, vi, viii.

1002 Barton papers, "Indian materials," APS.

1003 Harper, *Bartram's Travels*, 535, localized Bartram's notes on the Creek nation, but found no reference to this use.

1004 Heiser, *Sunflower*, 34.

1005 Benson, *Kalm* 2: 463. Thomas Hariot in *A Briefe and True Report of the new found Land of Virginia* (London, 1588), not available to Barton, had reported, "There is also another great herbe, in form a Marigold, about six foot in height, the head with the floure is a span in breadth. Some take it to be Planta Solis: of the seeds hereof they make both a kind of bread and broth."

tribes inhabiting Virginia; and those in the countries now called New York and Canada.[1006]

He also sought Bartram's knowledge of Indian illnesses and remedies. From Kingsess, 29 December 1792 Bartram answered Barton with:

Usefull queries concerning the Materia Medica of the Creeks and other Nations of Red Men: a perfect knowledge of which would be interesting to Human Society.

I think I have observed, that they have few complaints, or bodily ailments in comparison to what Afflict the inhabitants of the Old Continent, or the White people of this.

Yet they sometimes have Mortal diseases, very calamitous, even to the depopulation of Towns, & almost extermination of whole tribes, but these Awfull visitations happen but seldom, but when they do come it baffles the skill of their Physicians. Then they resign themselves to their fate. These scourges of Mortality seem to fall grieviously on their Children, in Whooping Coughs & Sore Throat which they have no remidy for. I was informed, A grievous distemper called Pleurisy in the Head which is contagious and sweeps away the Adult, particularly, Hearty Men. The Fall fever, or inflammatory Fever sometimes destroy many of their adults, & the Small Pox destroys all in its way, few escaping with their Life, & those are miserably disfigur'd. I believe the pestilential, or putrid contagious Fevers, by which I mean the Yellow, & Spotted Fevers have not yet reach'd them The Ague is very common. I do not know what particular remidy they use against each disorder, but I believe that most if not all their remedies are Vegetables, applyed in various ways, particularly, Emetics, Cathartics, Sudorificks, & Diureticks; The infusion or decoction of the leaves & tender young shoots of Ilex Cassine [dahoon] *is perhaps the most powerful & efficacious vegetable Diuretick yet known, for its effects are almost instantanious after the Draught; which I have experienced, often; this famous decoction (call'd Black Drink) is consider'd rather as a preventative, than a Medicine, & I do not recollect that it is properly amongst their Physick Plants. Yet held in divine estimation, supposed to be ordaind for the preservation of their health.*[1007] *The Indian Physicians, injoin the patient strictly to regimen, during their attendance on them And the Stove or Sweat houses are in constant practice.*[1008]

They use Phlebotomy, by Scratching, & I believe Cuping, or least sucking the blood out of the scarification.

The Lower Creeks, Siminoles in particular, live perhaps in the lowest and most inundated country on the Globe, yet appear to be Healthyer, & have fewer disorders than the Upper Creeks, whether they derive these advantages from the Natural food & Air of the Country, I know not, It is my opinion, from frequent observation, that a wet Country, in a Hot & even temperate Climate, is more favourable

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1006 Barton papers, "Indian materials," APS.

1007 Barton in *Collections*, 38, "It is thought to be one of the most powerful diuretics hitherto discovered. It is held in high esteem among the Southern Indians. They toast the leaves and make a decoction of them. It is the men alone that are permitted to drink."

1008 John Banister, in Virginia 1678–1692, describes the practice, Ewan & Ewan, *Banister*, 379–380.

> *to health & longivity, to Mankind, than a Dry Country in Those Climates...*[1009]

Bartram then turned to the white folk and their intemperate use of liquors in hot climates, which he was sure contributed to their unhealthiness.

When von Rohr visited Barton in 1793, he told him that the leaves of *Dracontium pertusum* are used by the Indians of Demerara for the treatment of dropsy—the whole body of the patient is covered with leaves. A universal sweat is induced and the patient often recovers. "This fact was communicated to me by my friend the late Mr. Julius Von Rohr, a gentleman whose death is a real loss to natural science, and perhaps an irreparable loss to the injured and distressed part of mankind; I mean the blacks."[1010]

"Our good friend" Carl Gotthold Reichel (1741–1825), Moravian bishop, sent a paper of Heckewelder's "containing the Delaware names for a number of vegetables" to Barton on 15 January 1794. Barton then queried Heckewelder, "Do the Indians cultivate the common potato? You informed me, when you were in town, that you could furnish me with a specimen of the sour-grapes. I wish to know the plant."[1011]

Among other subjects Barton wrote Heckewelder 15 August 1795 that "Last month, I was severely poisoned by the poison vine... Do you know if [Indians] are as liable to be poisoned by it as white people are?... I am preparing a little paper concerning this plant, for our College of Physicians."[1012] In *Collections*, 24, he treated *Rhus radicans*[1013] as a "topical stimulant," the "vescications" of which he "frequently removed in a short time by means of a mercurial wash." In 1804 he expanded upon the effects of the plant as detailed by an unnamed correspondent.[1014]

He continued to ply Heckewelder with queries, as on 6 September:

> *How do the Indians compress the heads of their children? Do the children have worms? Do they suffer from teething? What causes death among them? How long are they at the breast? When do the females begin to menstruate? Is it more or less regular than among us? what are their prevailing diseases? Do they have toothache, consumption? Any scrophula? King's evil? Any venereal disease before contact with whites? What medicines are in use as purgatives, pukes, diuretics, sudorifica, worm medicines, etc.? Are there any medicines from the mineral kingdom? Do they make use of dogwood flowers;*[1015] *any medicine as an anodyne as we use opium? In what diseases do they use Actaea racemosa, Black snake-root?*[1016]
>
> *I shall think myself farther obliged to you for your answers to all, or any, of these questions.—I know I am imposing upon you a very dreary task. I beg, therefore that you will take your time to answer my letters. I am, Dear Sir, with real esteem & affection, Your friend & very obedient servent &c.*[1017]

1009 Barton papers, APS.

1010 *Collections* 22, fn.

1011 Barton papers, APS.

1012 Gilbert collection, CPSP.

1013 [*Toxicodendron radicans* (L.) Kuntze. IPNI. ITIS.]

1014 *Collections*, ed. 1, part 2, 31–36.

1015 *Collections*, 12: *Cornus florida* L., Eastern Dogwood, has "considerably astringent bark" long employed in intermittent fevers. The ripe fruit in spirit or brandy makes an agreeable bitter.

1016 *Collections*, 9: Black Snake Root or Cohosh, *Cimicifuga racemosa* (L.) Nuttall, later referred to *Thalictrodes racemosa* (L.) Kuntze. The root is considerably astringent, used for sore throat, and the Indians used a decoction to cure the itch.

1017 Carson collection, CPSP.

Heckewelder replied to an earlier letter, and to this:

Bethlehem Septr. 26 1795

Dear Sir

Doctor Fryday, the principal Physician of this place, & who is a particular friend of mine, who is going to Philadelphia in a day or two, will (if he possibly can) do himself the Honor to deliver this to You himself, moreover as he wishes an Acquaintance with You—If it were in Your Power, I could wish with him an Answer to Revd Van Vlecks enquiry of You; respecting the plant he sent You some time since; & which is called here the Lobelia[1018]*—I believe I mentioned in my last, that I never saw a case of the Scrophula, neither of the Gout among the Indians—The medicine the Indians make use of are principally taken from the Vegetable Kingdom, except in some instances, & here they make use of Brimstone & Allum, but which they purchase of the White People. With such herbs, Roots or Plants as they make use of as Physick, they are very reserved, & that for these two reasons. 1) because such as are acquainted with the nature of roots or Plants, can get a living by applying them to such as stand in need of help. 2) because they believe it to be better for a Patient not to know what it is, that is served him; wherefore I have generally observed, that the most qualified Physicians among them, in case of need, have applied to others for Medicine—There are however some General Medicines which most know & occasionally make use of, such as black Snake Root, Serratula praealta,*[1019] *Salix humilis, Scrophularia marilandica, which together, boiled well in a kettle, & the patient labouring under Rheumatic pains, must Sweat over, there being some stones heated at the same time, which one after the other is put in the kettle, to keep a brisk Steam. The Prickly Ash*[1020] *(I dont know the Botanical name) is, where it is to be had very Valuable with them in this & other disorders.*

Note. Indians that are sweated for Rheumatic Pains in their Body or Limbs: have generally a hole dug in the Ground, where the Kettle with the boiled Roots are in; & the affected Limb is placed right over the Kettle, with an old Blanket rapped round so that no part of the Steam can pass by. I myself, have found Great relief in sweating over the above Roots, in this manner. As Purgatives & Pukes, they make use of many Plants; The Ipacuaguanha[1021] *is much in use both as a Purgative & Puke; the difference (as they have told me) is only in preparing it for what they please; but superstition has led them to believe, that the Water made use of for the above must be taken out of a running Stream; for a Puke it must be drawn up the Stream, & for a Purgative, the Water must be drawn downwards.*

1018 Some specimens Barton received were not *Lobelia*, but "*Serratula spicata*" [*Liatris*], also a diuretic. *Collections*, 36–37. [The name *Serratula spicata* L., 1753, was later referred to *Liatris spicata* (L.) Willd., 1803, and *Lacinaria spicata* (L.) Kuntze, 1891. IPNI. TROPICOS.]

1019 "*Serratula praealta*" may refer to a *Vernonia*, which Barton, *loc. cit.* says has been confused with *Lobelia*. [*Serratula praealta* L., 1753, was reassessed by Michaux as *Vernonia praealta*, 1803, later considered *Vernonia gigantea* var. *praealta* (L.) Daniels, 1907. TROPICOS.]

1020 "*Zanthoxylum clava-herculis*, or Ash-leaved Tooth-ache Tree, is a very powerful stimulant. Applied to the mouth and internal fauces, it occasions a copious flow of saliva," *Collections*, 26.

1021 "Ipecacuanha" usually *Euphorbia ipecacuanhae* L. mentioned in *Collections*, 26, as a "drastic emetic." On p. 31, Barton also lists *Podophyllum peltatum* L., the root as a cathartic, though he has never used this May-apple, Mandrake, or Wild lemon.

They likewise prepare Pukes of the Bark of a Vine, much resembling the Celastrus Scandens. This Vine bears bunches of red berries of a Sweetish Taste, but a Poisonous Nature.[1022] *As a Puke, I prefer this prepared to all I have yet taken; & it is customary among the Indians, that at times, when thought necessary, nearly all the Inhabitants of a Village, will take a Puke of this at one time; or the one half one day, & the other next day. I have seen Kettles 6 to 10 Gallon, prepared at one time; & the quantity served out to Grown Persons was about a Pint. The Seneca Snake Roots (Polygala Senega)*[1023] *is made use of by them as a remedy for a sore Throat; Calmus*[1024] *boiled or baked in Sugar for the same–Jensang Tea.*[1025] *They prefer the Leaves when they are to be had–The Bark of the Aspin (Populus Tremula) is in part a Valuable Medicine, made use of Women in Labour.*[1026] *They have plant which by mashing it a little and putting it on any Part of the Body, will draw Blisters as quick, & rather larger than the usual blister Plaster. I have made use of this with success, for the Sciatica, but do not know the Plant–their Worm medicines, I am not acquainted with; neither did I ever observe them Gather the flowers from the Dog-Wood. Nor do I believe they possess any Medicine which they use as an anodyne.*

I do not recollect to have heard the Indians mention the Snakes charming Birds. I have frequently heard them speak of their ingenuity in catching Birds, Squirrels &c. The RattleSnake to my certain knowledge was once held in particular Esteem by the Delawares. In the Year 1762 while I lived at Tuscaroras, I was several times prevented by the Indians from killing them, being told that the Rattlesnake was their Grandfather, & durst not be hurt. Since that time I have been prevented from killing them, because the whole race of Rattle Snakes would grow angry at it, & would give Orders to bite every Indian they came across–of late Years, & principally with the White People, these Notions seem to be lost; they will kill them; wherever they meet them, the same as the White People do.

The 'marks' I promised You will be part of my next; meanwhile I remain Your affectionate friend & obed. Servt. John Heckewelder.

P.S. Please when convenient send me the Botanical name of the Prickly Ash[1027] *I forgot the mention in my last that the Revd Jac v. Vleck & Dr Eberhard Fryday, wish to have their names enter'd as Subscribers to Your Valuable Work J H*

[Barton]: *Received October 5th 1795 Answered*[1028]

If Heckewelder referred to Barton's planned comprehensive work on the American Indian, it was never completed.

1022 *Celastus scandens* L., American Bittersweet, possibly *Euonymus obovatus* Nutt., Running Strawberry Bush.

1023 Barton, *Collections*, 33, suggests its use as a purgative; on p. 49 as possibly for pleurisy.

1024 *Acorus calamus* L., Sweet flag.

1025 Ginseng, *Panax quinquefolium* L., referred to by Barton, *Collections*, 21, as "Gynseng," a stimulant.

1026 The American *Populus* species not identified, [*Populus tremula* L., European Aspen], but *Populus* and *Salix* are sources of salicin. In *Collections*, 15, Barton says that as a tonic it "deserves the attention of the American physician."

1027 Cf. fn. 109. *Zanthoxylum clava-herculis* L. or *Z. americanum* Mill.

1028 Barton papers, APS. V. Vleck and Fryday remain unidentified.

From a widening area came information: the Indians had their salads. "The 'Shawnee-salad,' and the 'Indian Sallad' of the States of Kentucky, Ohio, etc. are not thoroughly known to me. They are praised by the White-settlers."[1029]

Colonel George Morgan (1743–1810), who had served as Indian Agent during the Revolution and was an early member of the American Philosophical Society, wrote from his farm "Prospect" near Princeton, New Jersey.[1030] Barton replied:

> *Philadelphia October 29, 1795*
>
> *Dear Sir*
>
> *I wrote to you some time since, in answer to your request concerning the supposed Lobelia.*[1031] *At the same time I wrote to Mr. Van Vleck. I have not received a letter since. I hope, mine did not miscarry. They were put into the hand of Mr. S. Hager.*
>
> *I have heard much concerning a plant called, by the Jersey Indians, Mockschaw.*[1032] *It is said to have a blue flower. The Indians eat the root, having previously sliced it, and baked it upon little-stone-pavements heated by the fire. I do not know, for certain, what plant this is. I have conjectured it is Pontederia cordata. Can you give me any information concerning this plant? It is said to be very common in Jersey, where many of the pavements, for baking the root, are still to be seen.—I am, with real esteem, Your obliged & affectionate friend, & c. B.S. Barton.*[1033]

Collections, ed. 1, part 2, was dedicated to John Coakley Lettsom in a warm tribute. Barton modestly referred to his own work as "a mass of mishapen materials, out of which, at some future period, a part of a more regular American Materia Medica may be construed. Whether I shall live to take part in the building, is extremely doubtful." His health, his constant concern, but also it may be his excuse for not perfecting this treatise.

In this Preface (p. v) he noted "Some of the newly named articles [which] have never before been noticed...relative to Materia Medica: such as Myrica cerifera,[1034] Prinos verticillatus, Hydrastis Canadensis [Goldenseal], and Frasera Walteri,[1035] &c. How far these are worthy of the attention of physicians, must be left to others to determine." The principal object of this work, he states, is to turn the physicians' attention to native productions, but again he enjoins caution (vi). Except for supposed remedies against

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1029 *Discourse*, 48.

1030 Hedrick, *Horticulture*, 83–84, tells us that the President's house at Princeton University stands on the site of "Prospect." On George Morgan (1743–1810) see Max Savelle in *DAB*.

1031 Of Lobelia Barton wrote in *Collections*, 36, "This plant was purchased from the northern Indians by the late Sir William Johnson, as a remedy in the venereal disease: hence its specific name, *siphilitica*. I do not believe, after paying some attention to the subject, that this plant has cured confirmed syphilis. I know that the Indians, even those who are best acquainted with the plant, are glad to have an opportunity of applying to the whites for relief when they have the disease." In a footnote, p. 37, Barton adds: "I do not believe that the disease of syphilis was known among the North-American Indians before they became acquainted with the whites. Mr. John Heckewelder informs me, that the Indians speak of it as a foreign disease communicated by the whites."

1032 Barton's note on *Pontederia cordata* L. represents an unrecorded use by American Indians, if indeed Mockshauw of New Jersey is that plant. Witmer Stone, *Plants of Southern New Jersey...* (Trenton, N.J., 1911 [1912]), does not mention the use of the root of this Pickerel weed. M. L. Fernald and A. C. Kinsey, *Edible Wild Plants of Eastern North America* (New York, 1943), 125, say precisely that "everything but the root is used." In a related genus of marsh herbs, *Monochoria hastata*, of Southeast Asia, the rhizomes are used as cattle food and as a medicine. Burkill, *Dictionary*, 1489. [Arrowleaf False pickerelweed, originally described in *Pontederia* as *P. hastata* by Linnaeus. ITIS. TROPICOS.]

1033 Hunt Institute for Botanical Documentation, Archives.

1034 [*Morella cerifera* (L.) Small, Bayberry, Wax Myrtle. IPNI. ITIS. TROPICOS.]

1035 [*Frasera caroliniensis* Walter, American Columbo, Gentianaceae. ITIS.]

snake bites, Barton commended the Indian uses of *Cornus* species for intermittent fevers; *Iris* (William Bartram reported that the Creeks cultivated and used) as a purgative, as well as *Podophyllum peltatum, Juglans cinerea* [butternut]; and as emetics, *Spiraea trifoliate,*[1036] *Euphorbia ipecacuanhae.* As sudorifics they used *Polygala senega, Aristolochia serpentaria, Eupatorium perfoliatum* [Boneset], and *Lobelia siphilitica.* Their anthelmintics were *Spigelia marilandica,* and *Lobelia cardinalis.*

They do not, however, "always apply their remedies with judgment and discernment. But what treasures of medicine may not be expected from a people, who although destitute of the lights of science, have discovered the properties of some of the estimable medicines with which we are acquainted" (p. xiv).

Introduced here is a sample of the remedies Barton offered, those where he definitely states that he received information on plant uses from the Indians.

Cimicifuga* [*Thalictrodes*] *racemosa. Black Snake Root, Squaw root. The Indians made a steam for relief of rheumatism; used the root as an astringent. It was good for "putrid sore throat," and itch, Barton found. *Collections,* 9, appendix, 46.

Polygala senega. Seneca snakeroot. Barton did not agree that it was a cure for snakebite. The Indians also used it for syphilis. Barton found it more useful as a diaphoretic in rheumatism, sometimes treating his patients almost exclusively with it. *Collections,* 35-36, appendix, 48.

Aristolochia serpentaria. Virginia snakeroot. The Indians chewed some part of it, chewed and spit upon the snake-bite, but Barton did not concur. He used it as a bitter tonic. *Collections,* 15.

Cicuta maculata. Musquash root, Wild parsnip, Snakeweed, Beaver poison. Dr. Greenway had written Barton of this species, "either a direct sedative, or a stimulant. It kills without inducing pain or convulsions. Perhaps the plant with which some of our Indians when weary of life, destroy themselves." *Collections,* 18.

Kalmia latifolia. Mountain laurel, Calico tree in South Carolina. It kills sheep and other animals. "Our Indians sometimes use as a decoction of it to destroy themselves." Barton used it to cure the itch. He found the powder may be used internally with safety for fevers. *Collections,* 19, 47.

Kalmia angustifolia, also called Lambkill or Sheep Laurel. *Collections,* ed. 1, part 2, 26, 35.

Lindera benzoin, which Barton called Laurus.[1037] Spicewood, wild allspice bush. "The Indians esteemed it highly for its medical virtues," so Cutler had informed Barton. *Collections,* 21 fn.

Prunus virginiana. Wild Cherry, though more probably *P. serotina* Ehrh. A strong decoction of the bark was found an effective anti-helminthic and was used for Indian children. It is "bitter, astringent, narcotic, and stimulant." *Collections,* 11; *Collections,* ed. 1, part 2, 21-22, 51.

Liquidambar styraciflua. Sweet gum. The rosin, "storax of the shops." The Indians used it in diarrhoeas. They mixed dried leaves with tobacco for smoking. *Collections,* 18.

1036 [Bowman's Root, also known as *Gillenia trifoliata* Moench, and later recognized as *Porteranthus trifoliatus* (L.) Britton. IPNI. ITIS. TROPICOS.]

1037 [Linnaeus originally noted this as *Laurus benzoin,* and the epithet was later associated by Blume with *Lindera benzoin.* IPNI.]

Gaultheria procumbens. Wintergreen. "Possessed of stimulant and anodyne quality" in asthma and a principal article in the materia medica of Indian tribes. *Collections*, 19.

Rhus glabra. Sumach. "Indian salt" because in some areas the Indians used a saline powder from the berries as a condiment with meat, and as a fixer for red dyes. *Collections*, 24, appendix, 53–54.

Gillenia trifoliata Moench. Indian physic, Ipecacuanha. The bark was used as an emetic and tonic, and was useful in intermittent fevers. *Collections*, 27.

Asclepias tuberose. Barton called it *A. decumbens*, Butterfly weed, Pleurisy root. The Indians treated chancre. Barton found it a purgative, sudorific, and escharotic, and "useful in restraining fungous flesh in ulcers." *Collections*, 30; *Collections*, ed. 1, part 2, 41–43, one of Barton's most verbose accounts.

Dirca palustris. Leatherwood, Moosewood. The leathery bark being very tough, the Indians made rope thongs. "Some of our Indians use as a cathartic a decoction of the bark of the root." *Collections*, 23, 33.

Eupatorium perfoliatum. Boneset, Thoroughwort. Barton devoted a half dozen pages to this plant and related species. The Indians called it "ague weed," using it in intermittent fevers, the whites, "Indian sage." It was useful in yellow fever in 1793 in Philadelphia, and for the "James River ringworm" or "herpes." Barton considered it astringent, emetic, sudorific, and tonic. Pursh took Thoroughwort when ill near Wilkesbarre, but it did him no good. *Collections*, 28; *Collections*, ed. 1, part 2, 22–26.

Nicotiana tabacum. Tobacco. The Indians used in rituals rather than therapetically, and as an offering. Barton sought to dispel worms by an external poultice of pounded leaves mixed with vinegar applied to the stomach. He also induced vomiting in persons who had attempted suicide by swallowing opium. *Collections*, 40, appendix 63–64.

Melia azedarach. Pride of India. The dried leaves a useful anthelmintic. "Children have been permitted to eat the berries without any particular regard to the dose." *Collections*, 42; *Collections*, ed. 1, part 2, 53.

Barton also noted that: "Some of our Indians make use of a plant, which, when mashed a little includes nearly as a good a blister as the cantharides. It has been used with advantage in sciatica. I do not know this plant." (*Collections*, 23.)

Information on plant remedies, including many of those used by the Indians, had come from many correspondents. Since Barton has been accused in print of not crediting those who contributed to his knowledge of natural history, we list here Americans whom he variously acknowledges for the medical uses of plants: Dr. Allison, army physician; William Bartram, "MS penes me"; Dr. Thomas Beddoes; Dr. Bedford of Pittsburgh; Mark Catesby; Rev. Nicholas Collin; Cutler; William Downey of Maryland; Dr. N. Drake; Dr. Duncan of Virginia; Dr. Charles Everett of Milton, Albermarle Co., Virginia; Dr. Greenway; Dr. Amos Gregg, Sr.; Dr. Amos Gregg, Jr.; Dr. Tucker Harris, Charleston, South Carolina; Major Jonathan Heart; Heckewelder; J. H. Heucher; Jefferson; Peter Kalm; Dr. Thomas Knox of Culpepper; Dr. Adam Kuhn; Meriwether Lewis; Humphry Marshall; Thomas Mason; André Michaux; James Moore; Dr. Charles Morris; Bernard Romans; Rush; Col. Winthrop Sargent; Mr. Saunders; von Rohr; Waterhouse; a Mr. [Alexander?] Wilson; and Dr. Matthew Wilson.

Barton continued to collect remedies. Perhaps a challenge might have been the letter "An Account of the Virtues of some American Trees, shrubs, and Plants. By James Mease, M.D." dated Philadelphia, August 15, 1805, and addressed to Dr. Redman Coxe. Coxe published it in his *Philadelphia Medical Museum*. The letter reads:

> *Dear Sir, I send for publication, a short account of the medicinal qualities of certain American trees, shrubs, and plants, which deserve much more attention from our brethren, than they appear hitherto to have experienced. The effects which I have stated to be produced by them, have either been never publicly stated before, or so slightly noticed, as not to make any general impression: however, their importance should induce medical gentlemen in the country, to attend to their cultivation, and I hope they will omit no opportunity of adding to the respectable list which we have already obtained of American remedies, as an immense saving would thereby be caused not only to themselves, but to the country in general; whence we now export many thousand dollars annually for remedies, which with few exceptions might be safely dispensed with.*
>
> *With the sincerest wishes for the success of your work,* [etc.][1038]

Mease began with *Ulmus americana* Marshall, Red elm, giving a detailed description of the tree before suggesting medical uses. Among Barton's papers, "Indian materials. New Views." is a memo dated "Sept. 1808. Mr. Elliott has been informed, & assured, that the Indian specific for the siphylis, among the southern Indians, is the root of Erythrina herbacea: a decoction of it, he remarked, that the root is large and perennial, though the stem is annual." Coral bean, a beautiful scarlet-flowered perennial of the pine woods of the Southeastern coastal plain, springs from elongated tubers, and reaches heights of a meter or more. It was well-illustrated by Catesby[1039] before it was named by Linnaeus. The stems freeze to the ground, growing renewed in springtime.

A third edition of *Collections*, the preface dated 12 December, appeared in 1810, dedicated to the students of the University. "Want of leisure prevented me from making all the additions to the work, for which I possess ample materials," Barton wrote. This edition, he hoped, "will not be deemed inconsiderable or unimportant." He was planning to give "to the public a third part in the month of November next," which would include illustrations, several plates already prepared. This third part was a plan unfulfilled.

Further afield, in a memo on the verso of a letter from A. Paschall in 1812, Barton noted that "The Peruvians call the plant Chasea. This word La Vega (p. 43, p. 89) tells us, in one place signifies radiant. In another place, he says 'the star Venus they called Chasea, which is as much to say, long and curled locks.'"[1040]

Eight manuscript pages of scattered notes survive, indicative of one more contemplated work, "Observations on the Dies employed by the Indians of North America by B. S. Barton, M.D." It is undated. A packet of threads with this note reads: "Given to me by Mr. Adlum, who assures me it is the root which the Indians use for dyeing their fine red. He says he was told they fix the color of it with the juice of crab-apple." John Adlum was no doubt the oenologist and author, a friend of Joseph Priestley while that philosopher-chemist lived in Northumberland, Pennsylvania.[1041] A. Edwards of Fort Wayne, Indiana, wrote to Barton 12 October 1809 on a dyestuff used by the

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1038 *Philadelphia Med. Mus.* 2 (1806): 157.

1039 Catesby, *Natural History*, 2: 49.

1040 Barton papers, APS. Garcilaso de La Vega (1539–1676).

1041 Regarding "fragments of biography of John Adlum (1759–1836)" see Dorothy S. Manks, *Huntia* 2 (1965): 59–66.

Delawares. Barton identified it as *Prenanthes suavis* [now *P. autumnalis*. It was probably the *P. virgata* [now *P. alba*], which William Baldwin reported in a letter to Darlington as having a root of "a beautiful yellow color."[1042]

John D. Godman in his *American Natural History* wrote, "It is with much pleasure, however, that we witness the feeling with which Dr. Barton replies to the illiberal observations of celebrated European authors, concerning the character of the aboriginals of this continent."[1043]

From "His Excellency, William Claiborne, Esq., Governor of Mississippi Territory, N. Orleans," on 17 August 1812, Barton requested information on local Indian languages, and desired two Indian skulls. This new interest may have been stimulated by the new edition of Samuel S. Smith, *An Essay on the Causes of Variety of Complexion and Figure in the Human Species*, ed. 2 (New Brunswick, N.J., 1810), which discussed possible relationship between the skull size and mental ability. Barton also requested his nephew, Thomas W. Barton, to obtain Indian skulls, while he was stationed at Fort Claiborne, Alabama, in 1814, as well as to learn Indian words. Thomas described the Indians of the area:

> *The Chickasaw tribe of Indians is much reduced by their war with the Creeks. They are the fairest, the tallest, the best made men, and the most cleanly and industrious of the three tribes. The Creeks next. The Choctaws are not large, very lazy, a filthy and cowardly people. The latter have the strongest coarsest hair, and the Chocktaws the finest. I cannot read the balance of your enquiries relative to the Indians, but have given you all I know.*[1044]

A Summary

Samuel Miller, when there was still the hope that the work of both Jefferson and Barton would see publication, wrote of their activity:

> *Mr. Jefferson, the President of the United States, has also made much enquiry into the languages of the American Indians, and devoted considerable attention to the Collection of specimens. But there is certainly no individual to whom we are under so many obligations for investigating these languages, and presenting rich vocabularies to the public, as Professor Barton, of Philadelphia, whose name we have had occasion to mention so frequently, and with so much respect, in several of the preceding chapters of this work. This gentleman had made large collections of Indian languages, which he has, with great learning and ingenuity compared with each other, and with Some of the languages of the eastern continent. By these investigations he has not only in his own opinion, but also in the judgment of many of his best informed readers, satisfactorily provided, that there is but one radical language among the Indians on the American continent; and that the nations of America and Asia have a common origin.*[1045]

1042 Darlington, *Baldwin*, 328.

1043 *American Natural History*, ed. 3 (Philadelphia, 1860), 179.

1044 Barton papers, APS.

1045 Miller, *Brief Retrospect*, 2: 120.

Jefferson, in response to a query from Count Jan Potocki (1757–1815), Polish historian, answered 12 May 1811 that Dr. Barton "is learned in the antiquities of this country, has employed much time and attention to researches into them, is active and punctual, and will, I think better fulfill your wish than any other person in the United States."[1046] This was written just before Barton was given the Lewis's journals and was expected to complete the notes on natural history, and after a severe illness the summer before. We found no record of letters between Potocki and Barton.

Herman E. Ludwig (1809–1856), jurist and literary historian of New York, citing *New Views*, wrote that "After [the Jesuits Lorenzo] Hervas and [Filippo Salvadore] Gilh, whose discoveries were diligently revised and republished in Adelung's and Vater's *Mithridates*, Dr. [Barton] of Philadelphia drew the attention of the scientific world to the languages of the Indians, with his comparative vocabularies of seventy words."[1047]

While Barton was abroad in 1815, with the establishment of the Committee of History, Moral Science, and General Literature in March by the American Philosophical Society, Wistar, now president, wrote to Heckewelder for information on all aspects of Indian life. In his reply Heckewelder wrote that had Barton not told him repeatedly that he was intending to publish a new edition of *New Views* and an account of the history and customs of the American Indians, with additions and corrections of the errors of other historians, "I should long since have tried to correct many gross errors, written and published, respecting the character and customs of the Indians."[1048]

Before publication of his *Indian Nations*, Heckewelder had second thoughts about Barton's work. He wrote Duponceau, French born philologist and jurist, six years Barton's senior, on 7 February 1819, criticizing Barton for seeking speedy answers to questions of Indian origins, and particularly for thinking that the Delaware and Iroquois were related. In a letter of 18 July Heckewelder speculated about what he and Duponceau might have accomplished had he and Duponceau collaborated, rather than he and Barton.[1049] Such critical reflections had not been evident in Heckewelder's last letter to Barton before Barton's departure for Europe in 1815, the letter reproduced later. It had concluded "Adieu my dear friend & believe me with sincere affection."

When in 1830 Duponceau[1050] published his translation of Zeisberger's Delaware grammar in the Society's *Transactions*, he wrote in the preface that if Barton had extended his word list to all the words in Pallas *Comparative Lexicons*, instead of speculating about Indian origins, he would have made a greater contribution to comparative linguistics. Still, he concluded, "it is useful to philologists and entitled to respect."[1051] Barton could not deny his genuine interest in origins, which still engages archaeologists, although they pursue different courses. Impressive in *New Views* is the overview of so much that had been written earlier by others on the natives of North and South America.

1046 Lipscomb and Bergh, *Jefferson*, 13: 62.

1047 *Literature of America, Aboriginal Language* (London, 1858), vi.

1048 APS.

1049 Freeman & Smith, *Manuscripts*, 24, nos. 877 and 880.

1050 Pierre Etienne Duponceau (1760–1844). He translated Heckewelder's *Notes and Observations* on Rev. John Eliot's Indian grammar, and works on Indian Language into French. His correspondence with Heckewelder was published in the *Trans. Amer. Philos. Soc., Hist. Lit. Comm.* 1 (1819): 351–448. Smith, "Duponceau."

1051 *Trans. Amer. Philos. Soc.* n.s. 3 (1830): 65.

Chapter IX

Becoming a Naturalist

"The Affections of Naturalists (like the arteries of animals) have their rise in a common heart, which beats from pole to pole."
—Barton to Julius von Rohr, 1793

On disembarking at Wilmington, Delaware, on 23 September 1789, Barton had sent his brother William a letter informing him that he had received a diploma from Lisbon Academy. Although the Royal Academy of Lisbon never granted any medical degrees, during Barton's time members elected to organizations were often presented with "diplomas"—what today we would term certificates of membership. Corrêa da Serra, one of the founders of the Academy, on his arrival in England in 1795 wrote to James Edward Smith that he had a "diploma" from the Lisbon Academy for him. Dr. William Withering (1741-1789), botanist and mineralogist, also possessed a "diploma." Barton was knowingly practicing a deception when he permitted his brother to believe he had received a medical diploma and when he told Dr. Shippen he had one, but failed to display it.[1052]

Penniless and apprehensive, Barton reached Philadelphia about 29 September and lodged for a short time with William at 86 North 5th Street near the corner of Arch. Yet his spirits rose when his family cared enough to arrange about this time that he sit for a portrait by the Philadelphia artist Samuel Jennings (ca. 1755-post 1843), who since 1787 had been conducting a school of drawing and painting of portraits and miniatures. Jennings caught the exuberance of an ambitious youth, benefitted in health and spirit by the sea voyage and its good company.[1053]

Soon Barton applied for the position of "attending Physician to the Goal of this city." On 23 October 1789 he wrote seeking a recommendation from his recent ship-mate, John Pemberton (1727-1795), whose brother James (1723-1809), Quaker, merchant and philanthropist, was a member of The City Corporation, of the board of Pennsylvania Hospital, and an organizer of the Pennsylvania Abolition Society.[1054] Barton wished Pemberton to speak for him to members of the Society of Friends:

> *Respected Sir...your simply mentioning to any of them that you have seen me and that you know nothing unfriendly to my character, might be attended with the best and most successful consequences to me as a young man. I hope, nothing can be opposed to me on this occasion—if it is necessary, I can easily produce the most ample testimonies of my attention to my profession, both here and in different parts of Europe. If nothing in my disposition would lead me to the most punctual attention to the duties of the office, for which I have offered myself a candidate,—I could not*

1052 H. Amorin Ferreira of the Lisbon Academy wrote us in 1971 that he could find no record of Barton's visit to the Academy and that the Academy was not known to have given medical degrees. There is, however, a copy of Barton's paper on goiter, translated into Portuguese, Barton, *Bronchocele.*

1053 Jennings also painted "Liberty displaying the Arts and Science," 1792, which hangs in the Library Company, Philadelphia. He went to London in 1792, copied and sold old masters as originals. See Figure 1.

1054 Edward M. Borchard on both in *DAB.*

neglect its duties, because it would be my interest, in future, to give general satisfaction on the occasion. I hope you will pardon this liberty...

P.S. I have been a good deal indisposed, for some days past, on which account I have not called to see J. Gulson. I hope he has recovered.[1055]

He did not receive the appointment. Was it because of his youth, confidences he had shared with Pemberton, or did Pemberton and others feel he had a more important destiny? Or did Rush, who had done much to improve the jail, block the appointment because only on Rush's prodding had Barton admitted he had not received his degree from Edinburgh? Barton then considered entering medical school to obtain a degree, but on 17 November 1789, less than a month after his application to the jail, young as he was, only twenty-three at the time, he was elected as Professor of Natural History and Botany in the College of Philadelphia to replace Dr. Kuhn, who advanced to the Chair of the Theory and Practice of Medicine. The general assumption among his friends and family was that he already had won his degree, and so his acceptance on the professional staff made it an anomaly for him now to enter the medical school as a student. His appointment was supported by Dr. Shippen, his uncle David Rittenhouse, Reverends White and Andrews, the three latter being on the College Board. On 9 April the following year, after his successful handling of his classes, and at the close of the session, it was decided to award Barton a Certificate from the Philadelphia Medical College, signed by Shippen, Thomas Parke, Rush, Kuhn, and Griffitts, and by the President, John Redman, and Vice-President Johannes Jones.[1056] From now on it was reasonable that his signature should appear as Dr. Benjamin Smith Barton, although he may already have hung his shingle. Program and requirements for attaining a degree in the College of Philadelphia Medical School were influenced from the beginning by the years Morgan, Rush, and Shippen had spent at the University of Edinburgh, although in Philadelphia the program had been shortened.

These were times of discontent with rivalry between the medical faculties of the College of Philadelphia and the State University of Pennsylvania. The College had begun in 1740 as a charity school, but under Franklin's influence had become a public academy in 1749; a College and Academy in 1755, then a College with a balance between classical and scientific education. The medical school, the first in the country, had been established in 1765 by Drs. John Morgan and Shippen, with a short-lived Botany Department in 1768. The College was made a part of the State University in 1779, some of the powers of the trustees then being taken away. The "rights and properties" of the trustees, who were influential and wealthy Philadelphians, were, however, after much conflict restored to the College in 1789 with the University apparently functioning separately. Rush and Adam Kuhn had resigned from the University to resume their positions with the College; Shippen managed to serve in both. Rush introduced a resolution about this time that it should not be essential to attend classes in natural history or botany in order to earn the medical degree,[1057] though he advocated that the students search out the native plants useful in medicine. Naturally Barton felt the resolution was aimed at him and so his advertisement in the city newspaper took on even greater importance to him: "Lectures on Natural History. Doctor Barton will begin his course of lectures on the Philosophy and Nomenclature of Natural History, on the second day of November next. October 26th 1790."[1058] Students would now be taking his course by choice, rather than by requirement.

After the union of College and University in 1791, there was some shuffling of subjects among the professors. Samuel Powel Griffitts now began to lecture on materia medica and pharmacy. "Kind, sincere, obliging," he was of retiring disposition, a founder of the

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1055 Gilbert papers, vol. 1, CPSP. Gulson has not been identified.

1056 HSP.

1057 Corner, *Two Centuries*, 41-45.

1058 Newspaper clipping from *United States Gazette*. Carson papers, 3: 44, CPSP.

Philadelphia Dispensary, fellow of the College of Physicians, and member of the American Philosophical Society. Caldwell wrote of him that "though an excellent practitioner of medicine, [he] was a very ordinary writer, and had neither tact nor talent to read, recite, or speak ex temporte."[1059] Wistar now became adjunct professor of chemistry. James Hutchinson became professor of chemistry, but his "lecture performance," according to critical Caldwell, had no "peculiar merit." Rush took the Chair of the Institutes of Medicine, and Barton retained his position as lecturer on natural history and botany.

Professor Barton's "lectures on Botany" began annually between the first and middle of April, ending sometime in June. An undated script that may well have been for an introductory lecture reads:

> *Only three or four hundred years have now elapsed since Columbus first landed on the islands of our Hemisphere: Since that great discovery, the progress of civilized population as well as the extention of Science, in different parts of the Northern Continent of America have been so rapid and so immense, as to form a singular, perhaps, an unparalled, circumstance in the annals of mankind. But the period of three hundred years is too short to unfold the works and misteries of Nature in a great continent. The progress of men in discovering, and investigating, truth is extremely slow:—Ages and generations must, sometimes, pass away before a science can rear its head into system:—even the life of a man is, not unfrequently, too limited for the discovery of one solitary, important fact. So immense;—so infinite, is Nature, so little is man!!*
>
> *And here, what a field for discovery and research is opened to our view. The volume of nature lies before us: it has hardly yet been opened: it has certainly never been perused. I don't mean to deny, that several very valuable works have been written upon the mammals, and the vegetables of our continent. Such in particular, are the works of Hernandez, Acosta, Plumier, Piso and Margraave, Plukenet, Cornutus, Sarrazin, Sloane, Catesby, Clayton, Jacquin, Brown, Pennant, Clavigero, Molina, and two Bartrams, and others; the labours of these writers, several of whom were men of an enlarged talent for observation, have contributed considerably to the knowledge of plants, and animals of the two American continents. But, I repeat it, the field for farther discovery is still immensely ample; it is almost entirely new.*[1060]

Even before his first natural history class meeting Barton had begun his correspondence with Thomas Pennant (Figure 36) and was preparing natural history notes for him. His lectures on botany and natural history were based on his own continuing field observations, on information gleaned especially from his good friend William Bartram, and from visits to the "Woodlands" of William Hamilton. Both Bartrams' Garden and the "Woodlands" were places of botanical treasures. The "Woodlands" was some distance to the west-southwest of the city; visitors from afar were treated to the enjoyment of one of the earliest greenhouses, or "stoves," in the country. To Hamilton, Barton entrusted tropical plants and seeds received from distant countries. Thomas Horsfield in Batavia sent seeds and plants in 1803.[1061] William Roxburgh sent Barton specimens from the garden at Calcutta, and Barton hastened them to the "Woodlands."

1059 On Griffitts: Caldwell, *Autobiography*, 127; Carson, *History*, 102-103; Ruschenberger, *Physicians*, 124-126; Sabin, *Dictionary*, 22431, lists Gouverneur Emerson, *Biographical Memoirs of Dr. Samuel Powel Griffiths* (Philadelphia, 1827), 24 pp.

1060 Undated scripts for lectures, Barton papers, APS.

1061 Letter to John Vaughan 3 September 1803. Archives, APS.

William Hamilton (1745-1813) had inherited the "Woodlands" of about 300 acres through his grandmother Till, whose father, Berkely Codd, had been an early owner. She had married Andrew, son of Andrew Hamilton, and through her the estate had come to William Hamilton. He seems to have spent his early boyhood in England, and the date of his coming to Pennsylvania is unknown.[1062] A Loyalist, William had been tried in 1778 and 1780 for high treason, and although found not guilty, he spent the following years in England, returning to the "Woodlands" and the new nation in 1787. He had probably carried with him the seeds of *Ailanthus altissima*, the Copal or Tree of Heaven, which soon graced his garden. The weedy saplings now brighten the asphalt cracks along parking lots, and soften the brick walls in mid-city Philadelphia.[1063] Hamilton corresponded frequently with William Bartram, urging him to come and see the latest additions to his greenhouse, or to come make a sketch of, for example, a chrysanthemum on 7 November 1796, "Senecio nova, floribunda as it now blooms in my Hot House," or to see the "near 100 colou'd plates mostly of plants (some of them from Botany Bay,)" Australia, loaned to him by an unidentified visitor.[1064]

Hamilton's early interest in *Podophyllum* was shared by the Bartrams and by Barton. On 20 September 1791 Barton sought the aid of William Bartram in obtaining roots of *P. peltatum*, and "such an account of the Podophyllum diphyllum as will enable me to make out a description of it for the Philosophical Society. You cannot be too minute in your description, & I shall rely upon it, knowing your accuracy & as you had the plant so much before you. I mean to have this plant engraved. Pray write to me as soon as possible on the subject.—From what part of the continent did you procure your specimen?"[1065] Barton read his paper before the American Philosophical Society 10 May 1792, and it was published in 1793 in the Society's *Transactions*. In his lecture he called the plant *Jeffersonia virginica*, but published it as *J. binata*. Michaux brought the plant to the Bartrams, renaming it *J. bartonis*, but it is now known as *J. diphylla*.[1066] On 12 October 1792 Barton announced its publication in a letter to Joseph Banks, at the same time requesting him to forward a letter to Sparrman in Stockholm.[1067] Barton had published his paper as a letter to Thunberg. In it he lamented Kuhn's lack of interest in field botany: "But alas! the only pupil of your predecessor [Linnaeus] that has made choice of America as the place of his residence, has added nothing to the stock of natural knowledge." Of a European visitor: "Dr. Schoepf, who seldom has any thing good of his own [in *Materia Medica Americana* (Erlangen, 1787)] follows Catesby in attributing to this plant only an emetic quality... A more respectable philosopher, the Count Castiglioni, has likewise fallen into the same error."

After painful delays, Bartram's *Travels* was published in 1792 when he was fifty-two, a "wondrous kind of floundering eloquence," or, in Emerson's words of "Biblical grandeur." The *Travels* mentions plants at times in a casual way as if fuller descriptions were being planned for an appendix. He did not have an opportunity to read proof to correct the curiously inconsistent spellings. Of *Amaryllis atamasca* (*Zephyranthes atamasco*) mentioned in the *Travels*, Richard Anthony Salisbury, British botanist, wrote to Bartram in 1793 that it was thriving at Chapel Allerton near Leeds in Yorkshire, "almost, I think, to as great a degree of perfection as in the hot savannas of Florida."[1068] In Salisbury's catalog of his garden in 1796[1069]

1062 [Joseph Dennie] in *Port Folio* 2 (1809): 505-507; Stetson, "Hamilton," 26-33. More on Hamilton in our Chapter XVII.

1063 Eugene Kinkead addresses present state of *Ailanthus* in *New Yorker* (24 October, 1970), 143-155, esp. 150.

1064 Jane Loring Gray, *Autographs*, HUH, vol. 3, f. 38.

1065 Barton papers I: HSP.

1066 [*Podophyllum peltatum* L. refers to the more common Mandrake or Mayapple. *Podophyllum diphyllum* L. refers instead to Twinleaf or *Jeffersonia* as described by Barton, 1793, as *J. binata*. Michaux published *Jeffersonia bartonis* (1803), and Nuttall and Rafinesque later employed both names *J. lobata* and *J. odorata*, respectively. These names refer to *Jeffersonia diphylla*, as established by Persoon in 1805. IPNI TROPICOS.]

1067 Dawson, *Banks Letters*, 37.

1068 HSP.

he proposed the name *Bartramia* for what had been named *Chelone* forty years before by Linnaeus.

The appearance of *Travels* may well have had a decided effect on the young professor, for by year's end, Barton had made a professional decision. He concluded his letter to William Bartram 30 December 1792:

> *I think, I have already told you, that all the time I can spare from the duties of my profession I intend to devote to the study of natural history. I aim at an extensive work on the natural history of the United States. As I am young, I may hope to accomplish it. I am sensible, however, that I stand in need of assistance. Your assistance will be of most essential importance to me. I mean not to flatter, but I am confident, that no man in America is so constantly employed in reflecting upon the beauties and the wonders of Creation as you are. You cannot but collect much. What you do not mean to publish yourself I shall be happy to receive, &, I trust, you will ever find me grateful in acknowledging the sources of my information.*[1070]

Of interest to both was the subject of instinct in animals. Bartram showed his reliance on rationality in instinct as he discoursed on the subject to Barton in the spring of 1793:

> *The wild Pigeon (Columba migratoria)*[1071] *returning from the So. at this season, and the Red Head Woodpecker staying so long with us, seem to indicate a mild winter, But why should the movements of these Creatures afford us any admonition, or instruction; do they understand any thing of Metaphysics, Astronomy or Philosophy? why not, I say they are ingenious little Philosophers, & my esteemed Associates.*
>
> *Can any Man of sense & candour, who has the use of his Eyes, Rational faculty, doubt that Animals are rational creatures? Man undoubtedly excells, all the inhabitants or creatures of this World, Not only in the Organization & Figure of his Body or Person, but also in his intellectual System, particularly in variety, expansion & powers, but if we compare the Moral System of the two Orders, & decide impartially, we must in many instances give preference to many Animals, which we hold beneath us. Animals seldom err in their choice of food (& consequently, are healthy, &c) & whatever concerns, the Senses & Appetites, & seldomer trangress the rules of Moderation & decency. & they often set us examples worthy of our imitation with respect to civil concerns &c.*

Then Bartram offers the madness, brutality, wretchedness, and depravity of national wars.

> *Is it not my Friend remarkable, very remarkable, how cautious, even Great Men and Philosophers are of allowing to Animals the power & use of Reason...*[1072]

Among his "Botanical Notes" for February 18, 1794 is "went with Wm. Bartram to see moss, Porella pinnata,[1073] growing within influence of tidewater near his house, about Platanus

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1069 *Prodromus Stirpium in Horto ad Chapel Allerton Vigentum...* (London, 1796). *TL-2.*

1070 Bartram papers, 1: HSP.

1071 [*Columba migratoria* refers to the extinct passenger pigeon *Ectopistes migratoria* L. AUD.]

1072 Bartram papers, HSP.

1073 [*Porella pinnata* L. is a liverwort, or bryophyte, but not a moss. TROPICOS.]

occ[urring] on roots, never on rocks, never seen in southern states, looks different wet and dry." On 7 May "Dr. Muhlenberg & myself walked to Mr. Wm. Bartram's," and he recorded species seen, the nativity of weeds, etc. On 13 June "in the woods near Mr. John Bartram's, Dr. Shultz found a plant I take for an orchis or some similar plant..." On the same day, one year later, under "Botany, Concerning Bartram's Garden, etc." he noted "in the garden, in flower, Styrax grandifolium [likely *Styrax grandifolia* Aiton, Bigleaf Snowbell]. Mr. W. Bartram says the plant is in the greatest perfection, as far as he has seen, about Cape Fear, in North Carolina..."

Over the years, besides Barton's visits to the Garden, letters passed between them showing their mutual respect. The elder man's longer years of observation during an outdoor life were a rich source of information to the younger man, bound by his medical profession and his pupils to a greater indoor routine. A letter from Bartram dated Kingsess, 3 April 1800 begins:

> *Health and independence—*
>
> *Believe me when I tells the*[e] *My heart leap't with joy when I saw the lad coming down the Avenue to the House. Thy note reliev'd me from much anxiety, fearing sickness & missfortune, not seeing nor hearing from You so long. Sympathy is the best substitute, or representation, of an absent friend. Hope's the last resort.—*
>
> *Spring, merry smiling Spring fast approaches our clime She's in sight ushered onwar'd by the joyfull throng of Fragrant Flowers, & singing Birds from the South.*
>
> *Jemmy*[1074] *has painted a pretty little Hawk, it seems undescribed. The horst-Tail-Tree is in flower,*[1075] *its fructification is very singular.*

Besides brief, local excursions along the Schuylkill and Delaware Rivers in the vicinity of Philadelphia and along the Conestoga while visiting relatives in Lancaster, Barton made more extended trips. One Saturday afternoon in June of 1791 with a Dr. William De Hart, he visited the "Falls of Paseak [Passaic, New Jersey]" where he found *Kalmia latifolia* in flower.[1076]

He was already showing the pressure of too many activities. On 26 August and again on 1 September the Managers of the Philadelphia Dispensary criticized him for inattention. On 12 January 1793 they quietly dropped him from their rolls, but later reinstated him. Back at the University in Edinburgh in 1792, after reminders of his debt, none of which survive among his papers, members of the Royal Medical Society considered "advertising...per totem Terrarum" his failure to return the money from the treasury which had been entrusted to his care while he was a vice-president of the society. Fortunately, however, James W. Wallace, Virginia pupil, had persuaded that such action would adversely affect attitudes toward other American pupils there, and the suggestion was withdrawn. Whether or not Barton had been made aware of this threat to his reputation and future, he pressed ahead in laying foundations to pursue his interests in natural history, especially botany, to establish his name among American scholars, and to keep it before European friends, all the while striving for financial stability through public acceptance of him as a physician and a teacher of future physicians.

This spring saw the departure of a good friend of the family, a visitor to Philadelphia. Julius Philipp Benjamin von Rohr (1737–1793)[1077] was born in Germany, studied medicine,

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1074 Nephew James Howell Bartram, "Jamme," (1783–1818) is the lad referred to. His manuscript, "Remarks and Observations on a Passage to the Cape of Good Hope, Batavia, Madras, Calcutta, etc. etc. by James Bartram Surgeon A.D. 1804 & 1805" has been published by the John Bartram Association, 1991, and transcribed and edited with a brief biography by Eleanora C. Gordon for the Association, Philadelphia, 1992.

1075 *Casuarina.*

1076 Barton papers, Miscellaneous, APS.

1077 Von Rohr sent plant specimens from the West Indies to Martin Vahl (1748–1804) in Copenhagen, and to Joseph Banks to whom he wrote informative letters from 1777–1793. When in New York on 10 August 1793 he reported to Banks that he was sailing directly to Guinea, but he died either in a ship's fire or shipwreck.

and with the title of Royal Naturalist had acted as an officer of the Danish Garrison on St. Croix in the West Indies. He was able to visit several islands and the coast of northern South America for plant collecting and particularly for his study of the cotton plant. He gave Barton over a hundred duplicates of these, and today they are in the Academy of Natural Sciences, Philadelphia. Barton's friendly farewell letter to von Rohr, dated Third Street, May 13th 1793, reads:

> *My dear friend,*
>
> *Inclosed the letter to Dr. Rogers* [in New York]. *Be so kind as to deliver it. Should you find leisure to select a few plants for me, I know, the Doctor will take care to send them to me.–*
>
> *Our ladies are now to be separated. But it requires something very different from the space of the ocean, or of land, to separate our affections. The affections of naturalists (like the arteries of animals) have their rise in a common heart, which beats from pole to pole. The pulsation in Africa shall not be lost. It will be propagated to America.*
>
> *I often thought, my dear friend, of your intended voyage and travel, with pleasure, and with pain. I foresee what new beauties, what new instances of immeasurable wisdom, in the works of nature, you will discover, in a land hitherto unexplored by science. I foresee, with still greater pleasure, the benefits and the blessings that will accrue to an injured race of mankind, from the wisdom of your scheme, guided and animated by the most dignified enthusiasm. The empire of reason is to be established. Your benevolence and labours are to contribute not a little, to the glorious event. But, remember, my amiable friend, a recent instance of a martyr at the shrine of benevolence, and virtue. Howard is no more!* [crossed out: My prayers shall follow you. In the]
>
> *Adieu: may the God of Nature take you under his protections. My prayers attend you.* [crossed out: I am not ashamed to pray.]
>
> *I am, with the most affectionate regard, Dear Sir, Your Friend, etc.*
>
> *B. S. Barton*
>
> *P.S. Make my compliments to Julius, and Marcus.*[1078]

Barton also sent a letter to Banks, 26 May 1793:

> *Your friend Mr. J. von Rohr of the island of Sta. Cruz has spent some weeks in this city. The old man is full of enthusiasm for the science of nature. The infirmities of his body have not prevented him from cultivating with success different branches of natural history, particularly botany. He is at present in New York, from which place he will soon sail for Guinea. He desired me to make respectful compliments to you.*[1079]

On 13 August von Rohr wrote Barton from New York that as yet he had no passage for Guinea, and that "there is no pleasure in botany when a man is alone in a large town...Here I learn Nothing, and with you, I improved every day."[1080]

(Dawson, *Banks Letters*; *Med. Repos.* hex. 2. 4 (1807): 54; Paul A. Fryxell, "West Indian species of *Gossypium* of Von Rohr and Rafinesque," *Taxon* 18 (1969): 400–414. *TL-2*; Urban, *Antillanae*. Pennell, "Historic collections," 140–141, fig. 5.

1078 Barton papers, APS. His copy.

1079 BM ADD 8098. Barton to Banks.

1080 Barton, bound correspondence, 1778–1815, HSP.

From another visitor to the city came an invitation to visit Citoyen Edmond Charles Genêt (1763-1834) between five and six on the evening of 28 June 1793. Genêt was First Minister to the Republic of the United States, having landed at Charleston 8 April with the intention of obtaining aid from this young nation in support of the French revolution, but Washington objected and had him repudiated. While in Philadelphia Genêt enjoyed the company of Jefferson and other liberals. Botany, agriculture, mineralogy, and scientific expeditions no doubt made up a good part of the conversation. Since Genêt was permitted to remain in the country, in 1794 he retired to a farm on Long Island, married Governor Clinton's daughter, and busied himself with scientific agricultural experiments.[1081]

The summer's epidemic of 1793 and its turmoil still affecting daily life, Barton found respite in summing up his current ambitions and interests (Indians as well as plants) to a correspondent also involved in the study of Indian lore, Reverend Charles Gotthold Reichel (1751-1825),[1082] Moravian missionary of Nazareth, Pennsylvania. He introduced his letter of 2 September 1793 by saying he would be happy to receive a copy of Kramsch's *Flora Nazarethana* and the supplements Reichel mentioned.[1083] No copy of this scarce early list of native plants is now in Barton's library, but he hoped it would add to his background:

> *With respect to the places of growth, &c. every information, you can procure, will be acceptable to me. I shd be glad to have, wherever they can be had with certainty, the names of the vegs. in the langs. of any of our indigenous tribes, as the Delawares, etc. By the way, some of the* [Moravian] *Bretheren have had considerable intercourse with the Indians of our continent, and, I doubt not, are in possession of vocabularies.*

Barton was able to obtain David Zeisberger's *Essay of a Delaware-Indian and English Spelling Book* (Philadelphia, 1776),[1084] which contains plant names, and he inquired of Zeisberger's address. He continued to Reichel:

> *...You say you wish me to communicate to you the 'outlines of the plan' of my work. I am engaged, at present, and have been for some years in two different works, each of which is of considerable extent. The first and that which will appear the soonest, is a work on the subject of the ancient remains of human art which have been discovered in different parts of our continent, and on the physical or natural & the moral history of the native inhabitants. This is the work of which you have seen the title in some of our papers, &c. The other work is intended to exhibit the characters and the history, that is the medical, the dietetical and other uses, &c of the indigenous vegetables of the United States. I propose to publish this work upon an extensive scale; but it is impossible for me, at present, to form an accurate idea of the precise extent. This Flora will be embellished with elegant engravings of the new, the rare, or hitherto imperfectly described and figured vegetables of the extensive tract of country which is the field of my research. Perhaps it may be thought a mark of my vanity, that I have*

1081 Maude H. Woodfin in *DAB*.

1082 Reichel, born in Silesia, converted from the Lutheran to the Moravian Church, came to Pennsylvania as principal of the Academy at Nazareth. He was author of a school geography textbook used for many years. Albert G. Rau in *DAB*.

1083 Samuel Gottlieb Kramsch (1756-1834), "Moravian missionary who botanized in the vicinity of Salem, N[orth] C[arolina]," Greene, *American Science*, 255. The Flora Nazarethana was apparently an unpublished manuscript; see H. Elkinton, "Samuel Gottlieb Kramsch—Schoolman and botanist," *Amer.-Germ. Rev.* June (1943): 21-28.

1084 A copy in Barton's library, now in LCP. David Zeisberger (1721-1808), longtime Moravian missionary intimately involved in Indian affairs in Pennsylvania and Ohio. Albert G. Rau in *DAB*.

said what I have. You will observe, I have undertaken to perform a great deal. I ought not, however, to be blamed for my ardour. A kind Providence blessed me with an early and a powerful attachment to the study of those subjects which are involved in the two works just mentioned. Though young I have already labored in the ample field for some years. I think I have not labored in vain. But I shall leave the public to decide whether the harvest has been proportioned to the rich fertility of the soil.

[As a postscript he added, after wishing for] *continuance of our correspondence. Do not forget the Locusts. An animal of the same name (though of a different family) was not thought unworthy of the notice of some of the inspired writers of ancient times.*[1085]

Bibliophile Barton took notice of the advertisement by Joseph Crukshank, printer and bookseller, no. 87 Market Street, in *Dunlap's American Daily Advertiser*, 6 December 1793, for Thomas Martyn's *Language of Botany*.[1086] Barton's copy is now at Pennsylvania Hospital.

A welcome visitor to his "bachelor's quarters" was The Honorable John Davis (1761-1847) of Plymouth, Massachusetts, recently appointed by President Washington to be comptroller of the United States treasury. Davis reported from Philadelphia on Barton's impressive plant collection to his friend Belknap, 14 November 1795:

Your letter to Dr. Barton procured to me an agreeable and valuable acquaintance. I frequently visit him, at his Bachelor's Hall, and now and then take a cup of Coffee with him surrounded with books, bottles with insects, and bones of the Mammoth and other evidence of his ruling passion—His acquirements are certainly very respectable for his age—for he is not yet 26.[1087]

Barton's apartment in "Bachelor Hall" in the neighborhood of the Treaty Tree, on North Fifth Street near the corner of Mulberry (Arch) had been a private club from 1742 until 1783, when part of it was offered for sale.[1088] The crowded aspect of the apartment testified to the occupant's concentration on his favorite fields and the progress he was making. Barton's letter of 17 December 1795 to Belknap speaks of his pleasure in Davis's company, and he mentions another friend of Belknap's, a Dr. May, who was passing through the city on his way south. He fears the drawings [of *Dipus*, now *Zapus hudsonia*] that were transmitted to Belknap's care for Dr. Peck have gone astray. "Mr. Davis tells me that he ordered them to be left at the Treasury." On 7 January 1796 Barton was able to report "My drawings have sailed back to Philadelphia on the Panama. I shall take some future opportunity of sending them again, for your inspection, and for the inspection of our friend, Mr. Peck." This letter, as had the one from Belknap, was carried by a Mr. Coleman. Davis wrote Belknap:

Phila. Feby. 21. 1796

My Dear Sir...I delivered the Letter to Dr. Barton last Sun 7. He appears to be pleased with the notice which the Historical Society have taken of him, and I flatter myself will be a working member. He has more than once asked me what kind of Communications would probably be the most acceptable to the Society. I recommended to him the observations

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1085 HSP.

1086 Thomas Martyn, *The Language of Botany: being a dictionary of terms...*, ed. 2 (London, 1796).

1087 MHS.

1088 Jackson, *Encycl. Philadelphia* 1: 206; Hannah Roach, Bibliography at APS.

which he once proposed to make on De Soto's expedition into Florida.[1089] *If any thing more interesting or amusing occur to you to which you would wish his attention be directed, You will suggest it—*

The Old Book[1090] *which I mentioned to you cannot be permitted to travel. But I shall make copious extracts from it—...*

I will attend to your hint respecting the Foresters [Forsters]. *I mentioned it to Dr. B. last Sun. He said he would buy a Copy today—this is encouraging—It is mortifying to see some of our best publications mouldering in Booksellers' shops, while the Pony-races, a string of Flip-flaps and other idle amusements of the theatre and Amphitheatre engage a general and uninterrupted attention—*[1091]

Davis's hopes for Barton's becoming a contributing member of the Historical Society were in vain, even though Barton may have intended to send papers. Nevertheless it added one more honor for the struggling naturalist-physician. As with so many of his proposals, the publication of De Soto's travels did not materialize. We found no other record that Barton had a copy.

The years 1793 through 1796 saw Barton particularly involved not only with his medical practice and the medical school, but also his zoological notes for Pennant. His appointment to the Chair of Materia Medica in 1797, and his marriage to Mary Penington that year, are dealt with in our account of his accession to that position. He now turned his attention to the preparation of *Collections*, the first part of which appeared in 1798. He had written to Thunberg 5 September 1796, "The more I see of our plants the more I am persuaded that an extensive work concerning them ought to be published. But for this purpose time and liesure are requisite. I have not dropped my design of giving to the world a work of this kind. I am every day engaged in making collections."[1092]

Early in his days as lecturer in Natural History and Botany, Barton had published a few notes and drawings from his trip to the West, and in 1789 he issued *Proposals* to gain support for his publication on antiquities. He managed two papers on the rattlesnake. After his advancement to the Chair of Materia Medica, which he assumed in 1797, that course and his "Natural History and Botany" ran every year from the first week in November until March or April. The lectures on materia medica centered naturally on the plant in its relation to medicine.

Although it probably made little difference to Barton, on 2 March 1797 President Washington vacated 190 High Street to make way for President-elect John Adams. Of far more significance to him was his election to the Societatis Physicae Jenensis signed by A. J. G. C. Batsch (1761-1802) on 24 October, though Barton did not receive his "diploma" until 29 April the following year.

"In the midst of many, and more favorite, pursuits," Barton was enthused by Priestley's forwarding to him the two volume "great work" that had been produced under the encouragement and patronage of Empress Catherine of Russia.[1093] With renewed concentration he returned to the subject he had pursued with Jefferson. Further stimulation had been answers Barton received from David Zeisberger, and from John Heckewelder in March on questions he had put to them regarding the Indian tribes with which they were

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1089 Barton had a copy of Garcilasso de la Vega, *Histoire de la Conquête de la Floride, &c.* (Leiden, 1731), in which De Soto's travels were considered. Ewan, "Barton's library."

1090 A copy of a book by Americus Vespucius was once in Barton's library. It may have been *Quatuor Americi Vesputii Navigationes* (St. Die, 1507). Ewan, "Barton's Library."

1091 MHS. Barton's copy of Johann Reinhold Forster's *Enchiridion Historia Naturalis Inserviens* (Halle, 1788) is now at PH.

1092 University of Uppsala.

1093 Pallas, *Comparative Lexicons*; see *New Views* (1798), "Preliminary Discourse," xxiv.

familiar. Putting this material with answers he had received from William Bartram, in 1797 he published his *New Views*, which he soon withdrew for a new and enlarged edition in 1798. *New Views* was planned to be but the first part of a treatise on Indian life and history, which he was never able to complete.

In July of 1797, at the height of the yellow fever season, and "by reason of the weak state" of his body after a bout of illness, Barton set out with Dr. Samuel Duggan and "three others" for his health and for natural history observations on his longest journey across New Jersey to New York, up the Hudson River to Albany, and across to Niagara Falls. He kept a journal, one volume, now at the American Philosophical Society, which records the journey as far as Fort Schuyler near the Falls of the Mohawk River, near Cohoes, New York. The second volume takes him on from Conandagua on 14 August to Niagara Falls, and is at the Pennsylvania Historical Society, the notes mostly on Indians (Figure 29). Mitchill reported: "We hear that Professor Barton, of Philadelphia, who has lately made a tour through the western parts of the States of New-York and Pennsylvania, intends to favour the public with a Journal of his excursion. This is the more desirable, as we understand that a number of new things have occurred to him in mineralogy and botany, zoology, and &c."[1094] Another unfulfilled plan: the publication of these journals. Plant specimens in his herbarium bear the date 8 August 1797 from Oneida, New York.[1095] "I saw so much to interest me in my ride through the dreary Oneida-woods that I cannot help wishing that this spot may be more carefully examined by some future botanist." This thought lingered in his mind until 1807, when he commissioned Frederick Pursh to make observations in northern New York State and to collect specimens for him. Sometime later he reminisced on a scrap of paper that "At Oneida, I saw an Indian woman, with bad teeth, pounding Indian corn. I was informed, that this labour devolves upon the female sex.—After they have pounded the corn, they sift it through a kind of basket of their own making.—I saw a very lusty Indian woman."[1096]

Also among his notes for the trip is:

> *Plants, Curious Nomenclature: Besides the vegetables which I have already mentioned, we saw, today, the following, viz. the Mitella diphylla, for which I know no English name, and a great deal of Collinsia canadensis, or Horse weed, both in flower. Horses are fond of it. This last, which is one of our finest vegetables, grows in much greater perfection in this part of the country, than it does farther south. Gmelin*[1097] *has, unnecessarily, changed its name to Collinsia praecox. Some of the timber we saw was very large, particularly the Liriodendron tulipifera, or Tulip-tree. In the State of New York, this tree is called White-wood, because a great part of the wood is white, or rather cream-coloured. There is a variety of this tree with a much yellower wood. The 'Yankees' of New York call this the 'Yellow white wood.' I shall not pretend to defend the propriety of this last name. I am persuaded that it would be thought what is (perhaps illiberally) called an Irecism, if that name were imposed upon it by the people of Ireland, instead of New England.*[1098]

With material from this trip and from a copy, received 13 March 1798, of Zeisberger's translation of the bible into Indian language, Barton produced a new edition of *New Views* (1798).

1094 *New York Repos.* 1 (1798): 246, and reprinted in ed. 3. 1 (1804): 246.

1095 Barton, *Flora virginica*, 13.

1096 Barton papers, APS.

1097 Johann Frederick Gmelin (1748–1804). Wagenitz, *Göttinger*, 65.

1098 Barton papers, vol. 1 "NY" folder, HSP.

On 14 August William Tatham wrote to Sir Joseph Banks at Soho that he, Tatham, had sent to Barton everything of botanical interest that he had found in Spain.[1099] Two reviews of Barton's paper on snake fascination appeared in Germany.

Barton may have visited Joseph Kiteley of Muncy, Lycoming County, while on his 1798 excursion with Maclure and party. On 21 August 1799 Kiteley wrote, mentioning the visit and thanking Barton for giving him to expect a copy of his "intended Larger work"—the flora? Kiteley suggests Bartram's *Travels* as an excellent source—he has just acquired a copy. He had intended to send specimens of fossils and plants, but must "defer it untill another opportunity" since it is only lately that he has "entered into these inquiries."[1100]

On 23 February 1799 at 9:30 a.m. Barton delivered his Annual Oration, "The natural history of Indian tribes of North America," in Mathematical Room at University Hall. Since there is no mention of the paper's having been referred to committee for publication, we assume he withheld it because he intended to make it a major production. That year he published the first American work devoted to ornithology, his *Fragments*, which also contained data on vegetation as related to bird migration. Having relied heavily on material gleaned from William Bartram, he acknowledged his aid sixty-six times in forty-two pages. Part II he planned would contain other zoological information, and it was well on its way, but did not reach publication as a unit despite his call for subscribers in his *Proposals for Elements of Zoology* of 1806. America still did not have readers enough with interest in the project. *Fragments*, however, maintained enough popularity over the years to be republished as late as 1883 by the Hakluyt Society. William J. Hooker wrote appreciatively of it, "We recollect, in our early youth, reading with great delight some of his *Fragments of Natural History*, as they were appropriately termed, which first brought to our notice many highly curious objects of that country, and reminded us of the writing of our own Stillingfleet and White."[1101]

After the death of Belknap, Barton contacted the new Corresponding Secretary of the Massachusetts Historical Society, John Eliot (1754–1813), concerning the republication of Captain John Smith's *General Historie of Virginia, New England, and the Summer Isles* (London, 1624), which he considered a worthy project. Since Eliot summarized mutual contemporary interests of the time, we present his answer to Barton here:

> *Boston, April 17, 1799*
>
> *My dear Sir*
>
> *I received your letter Jan. 6—and am much obliged to you for your expressions of regard. Being so much prejudiced in favour of your literary character, and the kind of learning you have pursued, & improved, I need not say how flattering every communication of Yours will be to Myself.*

1099 Dawson, *Banks Letters*, 804. William Tatham (1752–1810), soldier, civil engineer, and geographer. Born in Cumberland, England, he came to the United States in 1769 and spent years in Tennessee, North Carolina, and Virginia. In 1795 he was sent to Spain as American envoy to settle disputes that had arisen on the Florida borders, but the following year he was ordered to leave Spain because of his too frequent visits with the British ambassador, John Stuart, Earl of Bute. After some years in England, he returned to the United States in 1805 as geographer, until 1810 with the Department of State. He surveyed the coast from Cape Fear to Cape Hatteras. Having become intemperate, he was moved to the post of military storekeeper in Richmond, Virginia. Discouraged that he was accused of inefficiency, he published a twelve-page *Schedule of Vouchers, tending to prove that William Tatham has served the U. States near forty years...* ([n.p.], 1815). Sabin, *Dictionary*, 94412. Tatham committed suicide. Drake, *Dictionary*, took his information from "Memoir of Tatham and his Chronicles of the American Indian" in *Annual Biogr. Obit.* (London, 1820). Not seen by us.

1100 Barton papers, APS.

1101 *Edinburgh J. Sci.* 2 (1825): 115. Benjamin Stillingfleet, *Miscellaneous Tracts relating to Natural History* (London, 1759), and Gilbert White, *Natural History of Selborne* (London, 1789).

I have wished to see a new edition of Smith h[istory] *of Virginia.*[1102] *Dr. Belknap was desirous of it. Some of our Members think we have not met with sufficient encouragement by the sale of Collections—And that it would take up too large a share of the Volume. We have concluded to publish one volume for the year instead of emitting our matter from the Press in Numbers. I read Smith's History some years ago. It was a thin folio, with cuts representing America in various attitudes. It belonged to Dr. Mather & since his death is not to be found. There is one copy in the hands of a Gentleman here who makes no use of books—but is not obliging enough to let us have it for our Library. We should spare no costs to obtain so valuable a history were it only to preserve among our books of the Antiquities of every State. Would it be in your power to procure a Copy on any consideration? We have Duplicates of some books—odd Vol. 1. of Purches Pilgrims. And I have a good edition of Ogilvies history of America which I would spare, as We have another Copy in the Hist. Library! Some time, Duplicates of books are in one place, and a single Copy of the kind not to be had in another. tho' avidly sought after. Especially books which have gone out of circulation.*

The best book historian of Massachusetts (meaning the early period—its settlement—& government under the first Charter) was Mr. Wm. Hubbard, Minister of Ipswich. He published a little book of the Indian wars—& prepared this work for the press[1103] *—It was sent to Cotton Mather, who stole the facts and mingled them with the gollimauphry*[1104] *of his own brain. A fair copy of Hubbards MS was in the hands of Gov Hutchinson wh*[ich] *my father snatched from the Vandals who destroyed his house—*

I put it in the Cabinet of the Hist. Society. As our historians have been much indebted to it, they have wished rather to preserve than to publish this work. I confess that I have obtained much information which is combined with an Ecclesiastical hist. of Massachusetts, which I am compiling rather for the use of our Society than the entertainment of the Publick. And hope, should it ever see the light—it will not be till Hubbard is in everyones hands[.]

I trust you will pursue the physical history of the Indians—Mr. N. Webster thinks he obtained some knowledge of the diseases wh[ich] *formerly prevailed among the Aboriginals from this MS of Hubbard—But I rather doubt whether there is any important fact not published—The early historians paid very little attention to the Climate, state of the air &c*[.]

I respect Mr. Webster—But does He read enough for an author who writes so much? Or if his reading be various does he dig deep enough into the Mine, or ply hard enough for the precious metals? He is however a useful & an amiable man.

1102 It is uncertain whether Eliot referred here to the work by Capt. John Smith (1624), or to the more recent William Smith *History of Virginia* (Williamsburg, 1747), a copy of which Barton obtained and is at the APS. (Ewan, "Barton's library").

1103 Eliot seems not to have seen a printed copy. Sabin, *Dictionary*, 33446, records William Hubbard, *A Narrative of the Troubles with the Indians in New England, from the first planting thereof in the year 1607, to the present year 1677...* (Boston, 1677). On Hubbard, Drake, *Dictionary*, p. 460.

1104 [Gollimauphry (*sic*) refers to gallimaufry: a hodgepodge, jumble, or confused medley, from the Middle French (and later Middle English) *galimafree*, referring to a sauce, hash, ragout, or stew.]

> *Mr. John Davis is my particular friend, he was pleased with your enquiries of him & sends his particular respect, With due esteem and respect I am dear Sir, Your Sincere Servant John Eliot*[.][1105]

Barton was also pursuing his work on antiquities, publishing another paper on tumuli with Sargent, and an account of the Jumping mouse or *Dipus,*[1106] concerning which he had been corresponding for several years with Heckewelder and W. D. Peck. At long last his paper on the effects of camphor on plants, read before the Society on 26 September 1794, already having appeared in scientific journals in England and France, appeared in Volume 4 (1799) of the Society's *Transactions.* This volume also contained his Memoir on the so-called fascinating power of rattlesnakes, which he had read in April of 1794, and despairing of its appearance had published independently in 1796.

The year also brought a visitor, Dr. Hyppolito da Costa Pereira (1774–1823), Portuguese commissioner.[1107] On 3 January 1797 "Da Costa" in Philadelphia had written Humphry Marshall of his desire to visit his garden for seeds of American plants.[1108] Had Barton suggested the visit? In the spring Barton and Pereira made a collecting trip to Germantown, plant specimens in the Academy herbarium bearing this year's date.[1109] Pereira was to translate into Portuguese and publish Barton's paper on goiter (1801). Had Barton presented him with a printoff of the paper, which was to appear in Philadelphia in 1800? Did Barton also take the visitor to Bartrams' garden? Had he introduced him to Hamilton and the "Woodlands," which Da Costa visited on several occasions?

On another day in the field Barton recorded:

> *Sept.* [22] *1799. In a field near my house, I found a good deal of a plant which I take for Chelone hirsute* [*Peristemon pubescens* Sol.], *Some of the plants are upwards of two feet high... Same day, in flower, in Mr. Morris's wood, near me, a great deal of Gerardia pedicularis* [*Aureolaria pedicularia* Fernleaf Yellow False Foxglove]*...in the same vicinity, a great deal of Lobelia cardinalis, Chelone glabra* [White Turtlehead], *& Impatiens noli tangere in flower.*[1110]

To Benjamin Smith and Mary Barton a daughter Sarah Esther was born in 1799, but the year closed under the shadow of the death of the country's first President. George Washington died 14 December after contracting a severe cold and pneumonia while working in a heavy rain—"Cynanche trachialis" the three attending physicians had called it. Washington had been bled nine pints in twenty four hours. One of the physicians, Elisha Dick, a former

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1105 Barton papers, APS.

1106 [*Dipus* as formally described by Zimmerman (1780) refers to the Eurasian three-toed Jerboa. The American Meadow Jumping Mouse is *Zapus hudsonius*, also described by Zimmerman in 1780. MSW. WMW.]

1107 His name variously given. Hipólito José da Costa Pereira, *Diário da minha Viagem para Filadélphia (1798-1799)* (Rio de Janeiro, 1955), 213: "Janei em Germantown cum un botanico e medico, Dr. Boton." Rubens Borba de Moraes, *Bibliographia Brasiliana*, ed. 2 (Los Angeles and Rio de Janeiro, 1983) 2: 560–564, under Mendonça Hippolyto José da Costa Pereira Furtado de, lists among his other eighteen works, the translation of Barton's *Goitre*, and illustrated the title page on 561. Also listed is his paper on maple sugar, p. 560, and illus. of title page. A. F. Gunther Buchheim has prepared for publication an account of Da Costa in his "Rare Portuguese monograph on the sugar-maple tree." J. C. Rodrigues, *Bibliotheca Brasiliense* (Rio de Janeiro, 1907), 300, nos. 1256–1261, includes a detailed biographical account of "Hyppolito J. C. Pereira," as well as his writings, though not specifically mentioning *Diário*. Sabin, *Dictionary*, 18256, under Da Costa lists *Narrative of the Persecution of Hippolytus Joseph da Costa Pereira...for the pretended crime of Free-Masonry* (London, 1811). Da Costa had fled Portugal for London.

1108 Brooklyn Botanical Garden.

1109 Pennell, "Barton," 115.

1110 Barton papers, APS.

pupil of Rush's, had opposed the bloodletting, suggesting instead a tracheotomy, and the old storm over Rush's practice surfaced once more among physicians.[1111]

Early in February of 1800 Barton read before the Society his paper "A geographical view of the trees and shrubs of North America," an ecological overview he had begun about 1796, gleaned from his own travels, his wide reading, and notes from correspondents, and of course, from William Bartram. The paper was submitted to a committee headed by Benjamin Latrobe for consideration as to whether it should appear in the *Transactions*.[1112] Although approved, Barton stated that he withheld it to "render it more perfect." Only one printed copy, incomplete, is known, and that is dated 1809. It was sent with a letter to Jussieu in Paris, but after Jussieu's death it came with his papers to the Yale University Medical School.

One of those mundane irritations to an ambitious and busy physician now appeared, trouble with an unsatisfactory purchase. To whom should he turn but to farmer William Bartram, who advised him, "I am exceedingly sorry that Your Horse, suffer'd so through the Winter. I believe You were worsted in the Bargain. I think him not a good one perhaps it may be best to part with the poor Creature, & sell him as soon as possible"![1113]

Frederick Pursh had landed in Baltimore in 1799 and had been employed "like a slave" at Samuel Breck's "Springhill." His first meeting with a botanist in this country had been with his fellow German-speaking Rev. Muhlenberg, but he was soon directed to Barton. Their early associations were promising, though difficult because of Pursh's faulty English and his poverty, yet their common love of botany brought them together for visits rewarding to the immigrant and promising to the ambitious naturalist. Barton lent him Johann Georg Gmelin *Flora siberica* (St. Petersburg, 1749–1769, 4 vols.) and Jonathan Carver, *Travels*, the latter to acquaint him with the country and to help with his English. He engaged Pursh to draw plants for him, advancing him needed money. Pursh found difficulty in finding time for the drawing, as he wrote, addressing his letter to Dr. Smith Barton, North Fifth Street between Market and Arch Street, West Side, on 1 September 1801, since he now had to work from "sunrise to sunset with not an hour off," Americans not recognizing that a skilled European gardener was not to be treated like a common laborer. His meager income made impossible his repayment of the money that his new friend had generously advanced. Their meetings continued, Barton seeing the advantages of their association. Of that, more later.

A friendly bet was settled when on Saturday morning, 20 December 1800, a supporter for the re-election of the more conservative John Adams, Mr. Oswalds, boot-maker, sent his:

> *Compliments to Doctor Barton to congratulate him on the election of Mr. Jefferson to the presidential Chair; but sincerely hopes he May be, ere long, agreeably disappointed in respect to the Administration of that Gentleman.—he particularly requests the Doctor agreeable to the bett contracted to accept of the boots, for which purpose he has sent a boot Maker with a few pair—if the Dr cannot suit himself, he will oblige Mr. O— by letting the Man take his Measure for the purpose of Making a pair—*[1114]

Barton was satisfied with the election of his friend of mutual interests—did the thought enter Barton's mind that government aid for scientific research might now be possible? Content in the progress of his own career and pursuits, Barton wrote Jefferson 18 January 1801, happy to recommend his brother-in-law Paul Zantzinger for a government position. "For myself, Sir I have nothing to ask. Happy in the possession of a profession, and in the pursuit of science, I have no wish to leave the station in which I have been placed."[1115] Jefferson

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1111 Binger, *Rush*.

1112 APS, "Minutes," 294.

1113 Bartram papers, 3 April 1800, HSP.

1114 Barton papers, APS.

1115 *Teste*, Julian Boyd; Jefferson received the letter 11 February 1801.

replied 14 February that although he was not hopeful of government approval, he appreciated Barton's suggestion, for "if the good withhold their testimony, we shall be at the mercy of the bad...be pleased to present my friendly respects to Mrs. Barton, Miss Sarjeant & Mrs. Waters [Rittenhouse's two daughters], and to accept yourself my affectionate salutations."[1116]

A prick to Barton's frustration at not making greater progress on his natural history projects came from Joseph Kiteley:

> *Muncy/Lycoming County/,Pa. April 9, 1801*
>
> *Friend Barton, From a desire of Seeing a Publication which thou gave the Publick as Expectation of a considerable time ago, I again put pen to paper,...I now shall take the Liberty of Spreading a few pursuits before thee for Consideration...both myself & (I doubt not) but many others, will be glad to see...with a degree of clearness & certainty, First. What Beasts, Birds and other Animate Creatures are peculiar to this Continent alone. 2. What Species of Trees & Fruits are peculiar to it; that are not found Elsewhere. and Thirdly—Whether the interior parts of the Continent manifest any clear Tokens of the Flood in Noahs days, of its being Universal.*
>
> *I state these subjects barely from an Opinion that has forceably impressed my mind, Viz. that every Hemisphere hath its own Creation, mankind Excepted. Not being willing to trouble thee any further, I Respectfully conclude—Farewell.*
>
> *Jos. Kiteley*
>
> *P.S. William Ellis the bearer hereof will be several days in Town, If thou will please to have a few lines at Benj. Tuchner's Schoolmaster, directed to the care of WE. they will be likely to come Safe to hand. JK"*
>
> *Received April 18th 1801.*[1117]

Barton records no answer to Kiteley. In his *Discourse* under Geology, he makes no reference to Noah and the Flood, but stresses the importance of the study of fossils, "some of the most interesting medals of the revolutions which our country had undergone." There is good reason to suppose, he declared, that many of the valleys along the eastern coast "were once arms of the sea."

A bit of amusement and a kudo came from John Eliot. He first reported he had sent four volumes of that Society's *Collections* to the care of John Vaughan, and he lamented the lack of subscription support for reprinting back issues desired by Barton. The ninth volume was in the press. The legendary sea-monster, the Kracken, had now a counterpart spotted off the New England and Canadian coasts, and Eliot faced a frequent quandary among editors, to publish, or not to publish the paper of a devoted reader. He wrote from Boston 17 May 1801:

> *There is one communication I should have hesitated about publishing had I been one of the Committee for publication this year. Have you ever heard of our eastern Kraken? In the course of 18 years a snake (as report goes) has been seen on the water at a distance from the shore three times, which is 60 feet long. A vessel was so near it, that the people on board could make their observations upon it, it looked at them, so near they could plainly distinguish its eyes, & then went under water—Attestations of the people on board are made out and sent to the Hist. Society with their relations who have seen an animal of this kind before. It has always*

1116 Barton correspondence, f. 47, HSP.

1117 Barton papers, APS.

appeared between Broad Bay, in Main district, & the Bay of Fundy, nearest the former.

Verbal reports come along with these written testimonies, such as its charming the gulls from a great distance &c. and there are gulls enough in human shape That catch at it from a love of the marvellous.

Perhaps this will be brought as an objection to your ideas of snake charming Risum tenectis[1118]*, &c.*

I can have no faith in charms after reading what you have so ably written—and not much more in the rest of the story. It would do to publish in a magazine or newspaper but, I feel hurt that a story of this kind should fill historical pages—where nothing incompatible with the dignity of genuine narrative should be submitted, and truth should appear as dwelling under the striking beams of the Sun.[1119]

Can this have been the same as the "Immature" specimen seen off Gloucester, Massachusetts, by several "sober and respected citizens" in August of 1817? Bigelow named the "sea serpent" *Scoliophus atlanticus* and illustrated it for *Report of a Committee of the Linnaean Society of New England* (Boston, 1817). Several years later it was declared by the anatomist Jeffries Wyman to be a deformed black Snake.[1120] But was it?

Counsellor [Adrian] Bentzon, of St. Croix, was introduced to Barton by a letter from William Thornton[1121] in Washington 25 June 1801. After a pleasant visit with the traveller, Barton wrote to John Eliot, not only of his visitor, but of a new acquisition and inspiration:

Philadelphia July 4 1801

Reverend and Dear Sir,

Permit me to introduce to your acquaintance and attentions, My friend Counsellor Bentzen, one of the members of the late Danish Government, in the Island of St. Croix. Mr. Bentzen is a man of much information and ardently engaged in the cultivation of science. He is particularly intent upon acquiring a knowledge of the science of the United States. I take the liberty of requesting that you will endeavour to render his stay in Boston agreeable to him.

I have, within a few days, received a very curious and interesting old book, through the hands of one of my friends. It is once a copy of the original voyage (4 in number) of Americus Vespucius.—

...I am endeavouring to find leisure to translate this whole. Should I be enabled to do this it is not improbable that I may forward the book to the Historical Society. I design to illustrate this translation with some notes, &c[1122]

1118 [The Latin term *Risum tenectis* refers to "an object of laughter."]

1119 Barton papers, APS.

1120 Lansing, *Gifford*, 34–35.

1121 William Thornton (1759–1828) was born on the small island of Jost van Dyke, near Tortola in the Virgin Islands, also the birthplace of Lettsom. He attended medical school at Edinburgh 1781–1784, but obtained his M.D. later that year at Aberdeen University. He did not practice medicine, instead he encouraged the development of the steamboat, the *Thornton* plying the Delaware 1788–1790. On 19 January 1787 he attended a meeting of the American Philosophical Society, the record showing he had recently arrived in Philadelphia "from London." In 1789 he won the Society's contest for the best design for a new building for the Library Company, so entering the field of architecture, which was to take him to Washington. In 1794 he received a medal for his essay, "Cadmus," a method of teaching the deaf to speak. Priestley had won first prize. In 1807 Jefferson submitted to the Society by mail Thornton's report on yellow fever (see Thornton's 1793 letter on yellow fever to Lettsom in our Chapter VII). APS, "Minutes," passim; Fiske Kimball in *DAB*.

1122 MHS.

Barton did not translate a work by Vespucci. The book he referred to was *Quatuor Americi Vesputii Navigationes* (St. Die, 1507), Sabin, *Dictionary*, 99354 or 99355; Barton's copy not located. He inquired of this title when he wrote to Marco Lastri, author of *L'Elogio de Americo Vespucci* (Florence, 1787).[1123] Lastri answered from Florence 10 August 1805[1124] thanking Barton for his gift of *New Views* and regretting that he had only one copy of his own work, of one hundred printed, having distributed them throughout Europe. He supposed that Barton referred to the abbot Angelo Bandini's *Vita e Lettere di Amerigo Vespucci* (Florence, 1745), which he wrote had been criticized by the British historian Robertson. The unnamed publication that he mentioned as being sent by way of the American consul at Leghorn, Mr. Appleton, was possibly Bandini's work, of which there is a copy in the Library Company, Philadelphia. Sabin, *Dictionary*, lists the work as 3149; Lastri's book is Sabin 39154. Barton's interest in Amerigo Vespucci (1454–1512) stemmed from his references to trees of Brazil (brazilwood[1125] and *Cassia*, since those yielded myrrh!), masticories, minerals, and the customs of natives.

Barton had also requested John Davis to welcome Bentzen, and so on 12 July 1802 Davis wrote from Boston:

> *Dear Sir: Your last letter was presented to me by Counsellor Bentzen and I am obliged to you for affording to me the opportunity of an acquaintance with him. I found him interesting & intelligent and endeavoured to render his short residence here agreeable and gratifying to his very inquisitive mind. I thank you for the pamphlet* [on Fascination] *which I reed. by M. Bentzen. I have read it with pleasure...*[1126]

Davis then introduced Francis Nichols, newly arrived from Manchester, England, where he was a member of the Literary and Philosophical Society, and who intended to open a bookshop in Philadelphia. He is a man "of integrity and intelligence, a man of merit." Davis also requested Barton's opinion of Woodhouse's *Young Chemist's Pocket Companion*,[1127] which was to accompany a small apparatus and collection of chemical agents. Davis knew several gentlemen who would be interested.[1128]

A letter from Priestley in Northumberland, Pennsylvania, 7 July 1801, added to Barton's satisfaction. Priestley had "received with much pleasure" Barton's "Additional observations on fascination." He had read in *Medical Respository* that the "Introduction of Botany [*Elements*]" is planned, "it is what I very much want." He had read Smellie and Goldsmith, and added "I am indeed astonished that You should have done so much as you have done, occupied as you are in such various pursuits...do not fail to put my name among the subscribers to your Travels, or any thing else that you chance to publish in that manner."[1129]

In 1801 Barton issued a revised Part 1 of *Collections*. An early environmentalist, Barton had composed his paper "On the utility of birds in destroying insects and other productions harmful to mankind." This appeared in the *Massachusetts Society for Promoting Agriculture* (1801-1802), and with no prospect of a new volume of the American Philosophical Society's *Transactions* on the horizon for some time, he sent the paper to the *Philosophical Magazine* in London, where it promptly appeared, thus keeping his name before British naturalists. His

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1123 Barton papers, APS.

1124 Barton correspondence, f. 81, HSP.

1125 [Brazilwood, e.g., *Caesalpinia echinata* L. ITIS.]

1126 Barton papers, APS.

1127 James Woodhouse (1770–1809), *The Young Chemist's Pocket Companion: connected with a portable laboratory, containing a philosophical apparatus, and a great number of chemical agents* (Philadelphia, 1797).

1128 Barton papers, APS.

1129 Barton correspondence, f. 49, HSP.

letter to a former pupil, Dr. Thomas Semmes, was published in Semmes, *An Essay on the Effects of Lead...* (Philadelphia, 1801). In his letter he reminded Semmes of the caution with which he always spoke of medicines in his lectures, and he expressed his fears lest the patient suffer an accumulation of lead in the system. He had found acetate of lead useful in curbing hemorrhages and in gonorrhea.

During these increasingly crowded hours Barton had not taken time for visits to the Bartram family and garden. During the summer two-year-old Susan had been ill. James Howell Bartram was a pupil under Barton's care, and in August William thanked him for his attention to "Jamme," at the same time cautioning the doctor "Take care of thy health. I hope thy little D[aughter] is better, When will thee come. We wish to see Thee here."[1130]

The year had seen the possibility of one gratification. The handsome clock with its tiny planetarium attached to its face, made by his Uncle David Rittenhouse, was sold in 1801 on the death of its proud owner. It had been built for Joseph Potts for six hundred forty dollars and had been owned by Thomas Prior of Philadelphia since 1774. Although Prior had several generous offers, he valued his possession too highly to part with it. After two further owners Barton was eventually able to acquire it.[1131]

On the first day of the New Year, 1802, Barton was elected a vice-president of the American Philosophical Society, Jefferson the president.[1132] He would succeed Rush and serve with Wistar and Patterson, holding this position until his death. He would now work more closely with Jefferson on subjects of mutual interest—natural history and the languages of the Indians. Early in the new year he began plans for an extended field trip, in part, no doubt, to escape a second bout of yellow fever. On 1 March Robert Carter gave him a letter of introduction to a Virginian, Robert Page, Esq., since Barton was expected to pass through his area.[1133] On 26 March he was granted permission to visit the Cherokees by the Secretary of War, Henry Dearborn—his stated purposes, Indian lore and his health. From Washington City Jefferson enclosed the letter of permission and added on the 29th:

> *I am in hopes we shall have the pleasure of seeing you here on your passage. you can go in the stages as far as Petersburg in Virginia, where I think you have a brother living. Should you go on a higher road, Monticello will be on your way, where I shall be about the first of May. About the middle of that month I expect Mr. Randolph will set out for Augusta in Georgia, whom you would find a good botanizing companion. I really envy you your journey; but I am a prisoner of state. I shall be glad to hear from you in every part of your journey. accept assurances of my esteem & my best wishes.*[1134]

At the meeting of the American Philosophical Society 2 May, he exhibited the rattlesnake drawings done for him by Latrobe and a drawing of a "plant...known to me for several years," the plant Willdenow published as *Bartonia*.[1135] Since Barton considered Willdenow's description inadequate, he read his own:

1130 Barton papers, APS.

1131 Barton, *Rittenhouse*, 203n.

1132 APS "Minutes," 320.

1133 Barton papers, APS.

1134 Barton papers, f. 21, HSP. There is no mention of Cherokee country in Barton's Journal of this trip.

1135 [*Bartonia* Muhl. ex Willd. in *Ges. Naturf. Freude, Neue Schr.* iii, 401. 1801. Gotthilf Henry Ernest Muhlenberg (1753-1815) established the genus in the Gentianaceae with *Bartonia tenella*. IPNI.]

Description of a new North-American Plant
By Benjamin Smith Barton, M.D.

The plant which is the subject of this communication has been known to me for several years. It was originally discovered in the neighborhood of Nazareth, in this state, and was introduced into a m.s. Flora of the plants of the vicinity of that village, on the supposition, that it was the Buffonia [sic, Bufonia] of Linnaeus. But it was soon found to be essentially different from that genus, though, indeed, it has much of the habit or appearance of Buffonia.[1136] *The American plant is, certainly, a new genus, and has lately been described by Professor Wildenow, of Berlin, who has been pleased to call it Bartonia. As the learned Professor's description of this plant is, in some respects, defective and imperfect, I am induced to communicate to the Philosophical Society a more particular account, together with a drawing, both taken from the living plant.*

The Bartonia belongs to the first order of the fourth class of the sexual System, the class and order Tetrandria Monogynia. Its natural place in the System of the Swedish naturalist is immediately after the genus Scoparia,[1137] *with which it has some very close affinities.*

Barton then gives descriptive detail, and concludes that he knows nothing of the medical properties. The manuscript bears Vaughan's handwriting: "New American Plant By Dr. Barton rec'd 7 May 1802."[1138]

On Friday, 2 July, presumably taking Mary and Susan to visit with his sister, Juliana Susanna, and her husband, J. M. White, while he was absent on his longer journey, they crossed the Delaware River to New Jersey. Barton botanized from Bridgeton to Greenwich with White and Dr. Jonathan Elmer, who gave him the local names for plants seen. They also assured him that the sea was encroaching on the Cape May. White reported that a person "now Living" remembered when they planted Indian corn "where ships now anchor."[1139]

Home again, he now readied for his more extended trip of botanical exploration in the Alleghany Mountains toward his "Flora." Since W. L. McAtee has reproduced most of Barton's journal of this 1802 trip,[1140] we shall merely summarize his activities, omitting the botanical observations. Although Barton had alerted Dr. David Ramsay that he planned to visit Charleston, he did not reach that area.

Having travelled through York and Lancaster, Barton passed through Frederick, Maryland, learning some of the history of the area from "Old Mr. Duvall." On 17 July, the first date in the journal, he left Frederick in a chair (carriage) with Mr. Geyer as a guide, and crossed Ketochton Mountain, some of the way in a rain, to Harpers Ferry. Near the Ferry he found "*Jeffersonia binata* (*Podophyllum diphyllum* of Linnaeus[1141])" large and vigorous. The area through "White House," in what is now Jefferson County, West Virginia, on to Winchester, held many plants to entrance him. After a couple of days in Winchester, probably staying at the home of his brother-in-law, Richard Walker, he rode to his brother's farm about seven miles from Winchester. Richard Peters Barton on the 22nd summed up for

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1136 [*Bufonia* Sauv. ex L., Caryophyllaceae, *Diss. Das* 2 (1747); *Amoen. Acad. I*, 336 (1749).]

1137 [Licorice weed, *Scoparia* L., Scrophulariaceae, as represented by *S. dulcis* L., *Sp. Pl.* i: 116, 1753. LPND.]

1138 Barton papers, APS. Reported in "Minutes." Described as *Bufonia*, *Sp. Pl.*, 123, 1753, also by Adanson as *Buffonia*, *Fam. Pl.* 2: 257, 1763, this genus of the Caryophyllaceae closely resembles the gentianaceous *Bartonia*. Cf. Plukenet, *Opera*, pl. LXXV, fig. 3. Barton here adopted the eponym for Buffon, a topic of dispute (L. A. Fee, Thomas Moore & J. J. Bennett, *J. Linn. Soc., Bot.* 2 (1858): 183–190).

1139 Barton papers, APS.

1140 McAtee, "Journal," 85–117. The journal consists of stitched folders 9½ by 6 inches, and Barton wrote in ink. The octavo notebook is ½ inch thick, and almost completely filled, with but few blank pages. HSP.

1141 [Barton published *Jeffersonia binata* earlier (1793). Twin Leaf now refers to *Jeffersonia diphylla* (L.) Pers. 1805, rather than *Podophyllum*. IPNI. TROPICOS.]

him in a letter his knowledge of the Indian language of the area, they having discussed Indian plant names of the region, the Sulphur Springs of Opequan County, and the effects of drinking the water. On 25 July, Barton, and presumably his brother, visited the springs on Opequan Creek, and on 29 July visited Richard Walker in Winchester. From there they took a trip to North Mountain, which now divides Virginia from West Virginia, and then returned to Richard's home, since Barton had a cold credited to having wet feet.

With a Dr. Knox, on 5 August he visited the "Middle Mountains" from which he had a view of the Richard Peters Barton home. They stopped for dinner at a Mr. Richardson's, who, evidently enjoying their company, would accept no payment. The loss of Barton's horse and the rain determined them to stay over night, then Barton hired another horse, and returned to his brother's home.

Barton dined on 8 August at General Smith's with guests George Tucker (1752–1827), professor of law at the College of William and Mary;[1142] General John Neville (which Barton spelled Nevil) (1731–1803) of Pittsburgh, Pennsylvania, who may have been visiting his old home—his birthplace was on Occoquan River;[1143] and a Dr. Mackay. On Monday, 9 August, he dined at Mr. Tidball's with Dr. Mackay also present. He evidently left soon after for Monticello, but there is a gap in his journal. His mention, however, in his "Miscellaneous notes" and "Miscellaneous Facts" of information gleaned from Jefferson and Randolph, and Jefferson's invitation to him, affirm his visit. "Mr. Randolph informed me that Ceanothus is very common in this part of the country"; "Both Mr. Randolph and Mr. Jefferson informed me, that some 'Weymouth Pines' do grow as far south as the neighborhood of Monticello"; "Mr. Jefferson says, his Callycanthus [*sic*, *Calycanthus*, Sweetshrub] was brought from 'Green Mountain,' about 16 miles from Monticello"; and Mr. Jefferson says "Gleditsia grows very abundantlly about Monticello," all attest to his activities and conversations there. He states that he left Monticello before six a.m. on 26 August and breakfasted nine miles beyond Charlottesville.

Early on 27 August, Barton breakfasted in Staunton, where he met Rev. James Madison (1749–1812) Protestant-Episcopal, who had become Bishop of Virginia in 1790, and was professor of natural history at the College of William and Mary.[1144] Together they visited Warm Springs, Hot Springs, and vicinity, where they remained through August. Barton now returned by way of Lexington, visited Natural Bridge, and returned to Lexington until 3 September. Riding up the Shenandoah Valley he reached Staunton and left the next morning before breakfast. He passed through Kezell's town and New Market, and having travelled fifty miles that day, put up at the house of one J. Hup. Here he remained for several days, scouting the area, recording the observations of Hup and others. He resumed his way up the valley through Woodstock, then covered the thirty miles to Winchester and to his brother's home. He evidently paused a day or two before setting out on 15 September, a Wednesday, toward Pennsylvania. After a lunch in Charleston he came to Harper's Ferry in about fifteen miles. The grandeur of the scenery now impressed him more than it had when he had seen it two months before. Having crossed the Potomac ferry on Thursday morning the 18th, Barton breakfasted with a Mr. Nolan with whom he had been travelling for several days. "An old German" of seventy-five years kept the tavern. He had formerly lived on New River, Virginia, where the Cherokees had once lived, but now he had been located on this spot for forty-six years. The old gentleman gave Barton more information on Indian lore and local geographical notes. He pronounced "Kan-tock-ton" mountain, which Barton was soon to cross before reaching Frederick.

Barton's travel notes end here, but his journal continues with notes on plants that had particularly impressed him and their medical uses learned along the way. He then concluded

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1142 Armstead M. Dobie in *DAB*.

1143 Frank Edward Ross in *DAB*.

1144 MacLaren in *DAB*.

with "Miscellaneous Facts,"[1145] e.g., one omitted by McAtee, "Mr. Monroe informed me, that the Shawnee Indians formerly possessed the country immediately about the Warm Springs, and also a good deal of Berkeley Valley. He said, that the Indians inhabited about the springs as late as 1770. But he never understood, that they used them." Barton also kept a Commonplace Book that had no dates and may have notes from other trips. From this trip he learned, e.g., from a Captain Gildart and his wife, of the ravages of the Cucumber beetle; from Richard Walker, his experiences with Hollow-horn, a disease of cattle; information on tobacco diseases. Tobacco, he told him, is subject to three insects: the worm (caterpillar of the Sphinx Moth), a grub (?), and a very small fly, not bigger than a pin head, a coleopterous insect that eats young plants.

Barton was in Lancaster on 1 and 2 October 1802, for there a Dr. Houston gave him notes on his treatment of "Camp Fever." Back in Philadelphia on 5 November he delivered before the American Philosophical Society "this very long letter...written principally for the amusement of my learned friend," Lacépède, on American animals, the letter dated 31 October. Whether Lacépède submitted it to *Philosophical Magazine*, or whether Barton sent a copy directly, it appeared in that journal in 1805. Barton wrote:

> *I have lately returned from a three months tour (which had been principally undertaken for the recovery of my health) through the western parts of Virginia. I have visited many of the most interesting natural objects in that part of the United States, and have brought home a very considerable collection of vegetables.*[1146]

He had missed yellow fever, which had occurred in the late summer.[1147] Benjamin Silliman arrived in November for study in the medical school at what he called the close of the yellow fever season. He wrote that "the city was comparatively deserted; the streets were quiet, and an air of anxiety was visible in the aspect of the remaining citizens. Still, as cool weather had commenced, no serious danger was apprehended." Silliman's "Christian propriety" had been offended when Barton announced that the natural history class would meet Sunday at Peale's Museum. Silliman, however, declared that he must miss the session because he had "other occupations" on that day.[1148] William Baldwin attended his first course of medical lectures 1802-1803, and "was indebted—in common with many others, of that day—for a portion of [Barton's] Botanical zeal," so wrote Darlington.[1149] A terribly cold winter hit the area.

This was the year, 1802, in which the University of Pennsylvania moved from the old college site at Fourth and Arch streets to the west side of Ninth Street between Market and Chestnut. The Medical School now occupied the West Bow Room on the second story. Barton's paper on goiter was translated and published in Göttingen, and at long last his paper on poisonous honey, read at a meeting of the American Philosophical Society in 1794, appeared in volume five of the *Transactions*. On the last day of the year Enslen and van der Schot arrived with a letter of introduction from Sir Joseph Banks.[1150]

Natural history notes were coming in from correspondents in other parts of the country. On 5 November 1802 Barton had exhibited before the American Philosophical Society a specimen of "Rock Salt from the Missouri, where it is in large quantities on the surface of the

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1145 Appendix no. 1 "Miscellaneous Facts," and "Miscellaneous," pp. 112-115 in McAtee "Journal." Facts begin a, b, c, etc. to g; then x-xxxviii, with citation of the person who gave him the fact, e.g., "Nolan told me, that the seeds of Persimmons [*Diospyros*] make an excellent substitute for coffee. They are dried and roasted. Mrs. [R. P.] Barton told me the same thing."

1146 *Philos. Mag.* 22 (1805).

1147 *Philadelphia Gazette*, 9 August 1802.

1148 Fisher, *Silliman*, I: 97, 105.

1149 Darlington, Commonplace book, State College, West Chester, Pennsylvania.

1150 Barton papers, APS.

Earth," and specimens of calcined earth in which were embedded marine shells.[1151] Then on 21 January 1803 Barton read from a letter from John Watkins, "Observations on the Natural History of the Illinois on the Mississippi."[1152] Watkins also sent notes on plants and animals seen in the "northerly parts of Louisiana." The red fox[1153] was not known, buffalo[1154] were common, so were deer,[1155] raccoon,[1156] and panther,[1157] ground hog,[1158] grey fox,[1159] mink,[1160] flying squirrel,[1161] black snake, and opossum. Well up the Missouri there were porcupine,[1162] brown and white bears, and he described the grizzly,[1163] but made no mention of the bighorn.[1164] [1165]

In the spring Meriwether Lewis had a quick overview of botany in preparation for his trip to the West. William Darlington concluded his notes for Barton's lectures of the session December 1802 until 20 February 1803 with "This lecture was the last we received in this imperfect, but very curious, and interesting Course; the Doctor's health not permitting it to be more complete."

As both Professor of Natural History and as a curator of the American Philosophical Society, Barton turned to William Bartram for aid in procuring material for Europeans, and queried him on endless matters of mutual interest. A letter favored by nephew James Bartram was dated 23 January 1803:

> *Worthy Friend*
> *My brother desires to acquaint you that he will gladly comply with your requisitions respecting the seeds for the University of Holstein, as far as possible; But the Season is so far past, he can for the present furnish the Gentleman, (who as their Agent, you were pleased to recommend) with but a few according to his earnest request. But Will the Next Season, procure for him a general collection.*

The letter then turned to answers to Barton's queries:

> *The request you make concerning the Pith & Albumen of Trees & Shrubs is a noval & curious subject, worthy of Notice & requires some time for recollection for the present. I recognize, in respect to quantity of Pith, Bignonia Catalpa, Big. Radicans,*[1166] *Sambucus* [Elderberry], *Juglans nigra* [Walnut], *Rhus typhinum,*[1167] *R. glabrum: however the quantity of pith regards the age of the Wood.*

1151 APS, "Minutes," 328.
1152 APS, "Minutes," 330.
1153 [*Vulpes vulpes* L., 1758. MSW.]
1154 [*Bison bison* L., 1758. MSW.]
1155 [*Odocoileus* Raf., 1832. The American species include *O. hemionus* Raf., 1817, Mule Deer, and *O. virginianus* Zimmerman, 1780, White-tailed Deer. MSW.]
1156 [*Procyon loctor* L., 1758. MSW.]
1157 [*Puma concolor* L., 1771. MSW.]
1158 [Woodchuck, *Marmota monax* L., 1758. MSW.]
1159 [*Urocyon cinereoargenteus* Schreber, 1775. MSW.]
1160 [The American Mink is *Mustela vison* Schreber, 1777. MSW.]
1161 [The more common species is *Glaucomys volans* L., 1758, the Southern Flying Squirrel. MSW.]
1162 [*Erethizon dorsatum* L., 1758.]
1163 [American bears include the Black Bear *Ursus americanus* Pallas, 1780, the Polar Bear *U. maritimus* Phipps, 1774, and the Grizzly Bear *U. arctos* L., 1758. MSW.]
1164 [Bighorn sheep, *Ovis canadensis* Shaw, 1804. MSW.]
1165 *Trans. Amer. Philos. Soc.* 6 (1804) Pt. I: 69–72.
1166 [*Campsis radicans* (L.) Seem. ex Bureau, Trumpet Creeper. ITIS.]
1167 [*Rhus typhina* L., now named *Rhus hirta* (L.) Sudworth, the Staghorn Sumac. IPNI. ITIS.]

> *Quantity of sap in Trees & shrubs likewise depends greatly on the age of the Wood. Young Wood has a great thickness of sap in most Trees & Shrubs. of Old or well grown Trees, I recollect Pines, in general Cypris, Red Cedar, Tilia, Juglans, Nigra, several species of Hicory, Pyrus communis.*[1168]

So Barton had a lesson in plant anatomy, probably a little too late for his *Elements* (1803), which bore the preface date 28 February 1803. He delivered several papers before the American Philosophical Society, on 18 February on a new "Muscipula," and he exhibited a specimen of "Dipus" or Jumping mouse[1169] given him by William Bartram. On 15 April he told of a new species of "lizard," actually a salamander, and on 29 October he gave his "Hints on the Etymology of certain English words." All three papers appeared in Part I of volume six of the *Transactions* (1804).

The paper on etymology was referred to committee and approved by Peter Stephen Duponceau (1760-1844),[1170] an active member since 1791. Born on the protestant island of Ré, from early childhood he had shown an interest in languages, which he learned easily and taught for some years in Paris. He had been hired as secretary to the Prussian general F. W. A. von Steuben to come to the United States as a translator into English. While serving in the army in the spring of 1788, Duponceau was intrigued on meeting his first Indians at Valley Forge. After the war he became secretary to Robert R. Livingstone, United States Secretary of Foreign Affairs, studied law, his language ability especially critical for this period. He remained an active member of the American Philosophical Society, serving as its president 1828-1844. Whereas Barton was interested in tracing the origins and similarities of Indian languages, Duponceau was particularly struck by their efficiency and beauty.

Several of Barton's papers appeared, or were republished in 1803, as was his "Poisonous honey" in *Journal of Natural Philosophy*. His paper on Indian dogs was sent to *Philosophical Magazine*, perhaps because there was no opportunity in Philadelphia for all he wished to put into print. His letter to Dr. Daniel Ramsay on snake bite cure also appeared in that journal. *Hints on Etymology* came out as a separate pamphlet. There appeared the anonymous *Gleanings...on Husbandry, Gardening and Rural Affairs*, adapted from a London work, which seems to have been edited by either Dr. James Mease or Judge Richard Peters as the "American Farmer," and Barton as the "Gentleman of Philadelphia" responsible for interspersed remarks.

Barton's pupils were increasing in number, and they must claim his first devotion. It is as a teacher of future physicians that his reputation most certainly survives—he was an important figure in the medical school. With skill and subtlety he encouraged the young pupils to become more cautious, questioning, and observing in the uses of medicines of the day. The American Linnaean Society that he initiated this year comprised among the ten founding members eight medical pupils. With his encouragement most of his pupils wrote their theses on plant uses in medicine, and he hoped they would continue to study the possibilities of native plants as they moved to practice in new areas of the country.

Barton had hoped to take an extended collecting trip, and again planned to visit his former pupil, Dr. Daniel Ramsay, in Charleston in the spring. Specimens dated from Baltimore, 1804, in his herbarium, now at the Academy of Natural Sciences, show that Barton did get into the field, though not so far south as Charleston. On 12 May Darlington recorded that instead of "Lecture 24th, This being a joyful day among the Republican Citizens, and there being a great parade in order to celebrate the peaceable acquisition of Louisiana, I did not go to lecture. Dr. B. proceeded with the classification as far as the 6th class, or

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[1168] Barton papers, APS. [*Juniperus*, Red Cedar; *Pyrus communis*, Pear.]

[1169] [Perhaps better identified as *Zapus hudsonius*, Meadow Jumping Mouse. *Dipus* is not native, the Three-Toed Jerboa found in Eurasia. MSW.]

[1170] "The Botanist," *Monthly Anthology* I (1804): 391.

Hexandria." On 15 May "there was no lecture. We went to Mr. Hamilton's superb garden in the afternoon, and had a demonstration of many rare plants. Among others a specimen of the Canna in flower... This was the third excursion we had had—the other two were to Mr. Bartram's garden, where there is a numerous collection of plants..."[1171]

Barton's attention with the passing years became more and more involved with visitors, due particularly to his activities for the American Philosophical Society. He continued to work on his "Flora," however, more on this later.

1171 Darlington, Commonplace book.

Chapter X

Members of the American Philosophical Society

Some American Members

The American Philosophical Society, the first scientific society in America, had been formed in 1743, the outgrowth of Benjamin Franklin's Junto. It merged in 1769 with the Society for Promoting Useful Knowledge, and in 1771 published the first volume of its *Transactions*, heavy in content with papers by Franklin, Rittenhouse, John Bartram, and Dr. Thomas Bond, one of the founders of Pennsylvania Hospital. Elected members soon comprised most of the leading physicians and important leaders of the day. The Society also invited members from other colonies and from Europe. Barton's father, Rev. Thomas Barton, Washington, Jefferson, William Smith, Rev. John Andrews, Rev. William White, Richard Peters, Dr. Rush, and John Vaughan became members. Barton's brother William read a letter addressed to Rittenhouse, "Observations on the Progress of Population," at a meeting in February 1787, and his paper dealing with the statistics of births and deaths in Philadelphia at an April meeting in 1790. Richard Peters Barton in 1787 sent in his paper on the method of cultivating cotton in Virginia, and was elected in 1792. In 1788 Matthias Barton reported by letter from Lancaster on shells, Indian darts, and bear's gut as used by Indians. "Dr. Barton, at present in Edinburgh" was elected a member of the Society at the same meeting as Rev. Nicholas Collin,[1172] 19 January 1789.

One of Barton's first assignments within the Society in 1790 was to report on an "Historical View of such Papers as they may deem valuable," which was requested on 16 September, but was not ready on 7 October. He had become a Fellow of the College of Physicians that year, and was already showing the pressure of too many activities—and that he could postpone one duty to concentrate on subjects closer to his current interests.

Rev. Nicholas Collin (1746–1831) was born in Funbo in central Sweden, earned a degree from the University of Uppsala, and came in 1770 to a Lutheran pastorate in New Jersey, but moved in 1786 to Philadelphia and the Gloria Dei Church, locally known as Old Swede's Church, the church in which Barton's parents had been married. Collin's interests were wide-ranging. He became a member of Franklin's Society for Political Inquiries, delivering a paper on "the advantages resulting to a nation from the cheerful temper of its inhabitants," and wrote newspaper articles in support of the Constitution. Collin had proposed the sugar maple[1173] as a potential industry in his native Sweden, to which he sent insect specimens and bird skins. A botanical garden for the growing of medicinal plants would be, he proposed, "most valuable in every respect." He kept records of weather and rainfall, experimented with grafting and fertilizing in his orchard. During the yellow fever epidemics of 1793 and 1797 he remained in the city, contributing his observations to the *Philadelphia Gazette*. His wife's death in the 1797 epidemic led him to extra effort in the study of the malady, toward which he assembled about three hundred volumes.[1174]

At the meeting of 3 April 1790, the first recorded for Collin's meeting Barton, Collin read "An essay on those inquiries in Natural Philosophy which at present are most beneficial to the

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1172 Johnson, *Collin*, 108–114, discusses his contribution to the Society. Dates of members' election appear in APS, "Minutes."

1173 [*Acer saccharum* Marshall, Sugar Maple. IPNI. TROPICOS.]

1174 Johnson, *Collin*, his observations on yellow fever, 176–180.

United States of America," which was duly published in the Introduction to the third volume of the Society's *Transactions* (1793). He became a staunch supporter of young naturalist Barton, an inspiration and a friend who would introduce him to naturalists in Sweden. After Barton's tumultuous years of worry and frustrations in Europe, to be received so warmly by Collin and the Society gave him confidence that his natural history interests would receive support. On 16 October 1789 Barton read "Observations on an earthy substance found near the Falls of Niagara, and vulgarly called the spray of the Falls; together with some remarks on the falls. by Robert M'Causlin, M.D. in a letter to Dr. Barton," which was published in the *Transactions*.[1175]

Collin and Barton were enthusiastic workers for the Society, Collin for the next forty years, holding various offices, and Barton until 1814, both contributing to the Society's *Transactions*. Collin was a source of advice to Barton on foreign correspondents, and how letters might safely be transmitted. On 16 December 1808 he proposed that the Society employ a translator of useful periodical papers in its possession. It was referred to the Board of Officers. To Barton, Collin was "a gentleman of very extensive attainments in science and literature, and a man of most amiable character"—so he described him with a letter of introduction to Rev. Jeremy Belknap in Boston in June of 1791.

Another steadfast member of the American Philosophical Society was John Vaughan (1756-1841), who came to Philadelphia from England in about 1780 and was soon established in financial circles. He was elected to membership in 1784. His value to the organization was quickly recognized, and he was elected a vice-president the following year, serving through 1786, then becoming secretary in 1789, in which capacity he served for sixty-five years, handling building arrangements and other business in the development of the organization.[1176] From 1802 until his death he also served as librarian, generous in his gifts of books to the library. His London-based brothers, William and Benjamin Vaughan, often facilitated purchases and their safe transmittal to Philadelphia. On occasion Vaughan and Barton traded books, and after Barton's death he handled purchases by the Society of books from Barton's estate. He also aided Barton through the years in the management of loans to and by Barton, and negotiated purchases. Vaughan and Barton served together on numerous committees for the Society, one of the earliest being to handle arrangements for the funeral of Franklin in 1790.

The renowned member, Thomas Jefferson, had even greater influence on Barton's life and activities. Now that Barton was back in Philadelphia among friends of like interest, with a lectureship in the College, and his shingle on display, he focused immediately on one subject close to his heart—the ancient "monuments" he had met with on his excursion in 1786 into the West. He put into print a broadside, *Proposals*, seeking support for his publishing on "Ancient antiquities," and he sent a copy to the author of a work he had long admired. Thomas Jefferson's *Notes on the State of Virginia* was first written in 1781 for the use of a "foreigner of distinction" in answer to queries. It first saw publication in French in Paris (1782), then in London (1787), and in Philadelphia (1788, 1794, and 1801), in New York in 1801, and again in Philadelphia in 1803.[1177] Of this work Barton queried Pennant in 1793, "Have you seen Mr. Jefferson's Notes, which I have mentioned?...This is a valuable book; the production of a man of genius, a man of Science, a lover of learning, a good and a great man."

In March of 1786 John Adams had sent Jefferson as a representative to London, where he took the opportunity during his seven weeks to visit seventeen English gardens with a copy of Thomas Whately's *Observations on Modern Gardening*, ed. 3 (London, 1771) in hand. Jefferson's observations are engaging. In particular he found the Duke of Devonshire's Chiswick showing "too much art"; Hampton Court "old fashioned"; saw Pope's old garden at

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1175 *Trans. Amer. Philos. Soc.* 3 (1793): 17-24. Dow, *Niagara Falls* 1: 495. M'Causlin lived at the Falls 1774-1783. Was he an Edinburgh graduate?

1176 Corner, *Rush*, 204; Bell, *Early Amer. Science*, 75-76.

1177 Barton's copy of the London edition (1787) is at the APS.

Twickenham with obelisk and grotto; Wotton, and with Adams, Stowe, both belonging to Buckingham; and Blenheim, the largest garden, featuring roaming deer. Back in London he visited Kew, and on the 26th left London for France and Italy, their gardens, and scientists. In April of 1790 he arrived back in the nation's capital, Philadelphia, as Secretary of State. This was his third visit to the city, his first having been 20 June 1775 as a Virginia delegate to Congress, and his second in 1776. He remained in the city from sometime in 1790 until December 1793, but spent the yellow fever months in Germantown. He returned to Monticello until 3 March 1797, when he assumed the office of Vice President of the United States and returned to Philadelphia. He had been elected a member of the American Philosophical Society in 1785, and in 1797 he was elected President of the Society, succeeding Rittenhouse, who had succeeded Franklin. There were three vice presidents that year, Wistar, Rush, and Collin. Jefferson held the office until his retirement in 1815, when Wistar was elected. As President of the Society he was titular head in this country of the advancing sciences, theoretical and applied. His broad interests in plants, animals, fossils, Indian languages, geography, soils, and the books about them, all relate to his coterie of friends and associates in Philadelphia, and especially to Barton, who shared so many of his interests.

Barton presided over many of the meetings from 1802, when he was elected a vice-president of the Society with Wistar and Patterson, Jefferson moving with the capital to Washington, and then, on his leaving office, to Monticello.

The letter that Barton enclosed with his *Proposals* for his publication on "Ancient Antiquities" suggests that Jefferson had not yet reached Philadelphia, or had not yet attended a meeting of the American Philosophical Society since Barton's election. It reads:

> *Philadelphia, July, 26th, 1790*
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> *Sir:*
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> *I take the liberty of enclosing to you a paper of Proposals for a work which I have been engaged in writing, for some considerable time, & which is now nearly ready for publication. I am confident your name, Sir, as a subscriber, will add not a little to the consequence and success of my undertaking, as you have long distinguished yourself as a friend of literature. I have ventured to request it.—You will observe, Sir, from the title of the work, that the subjects which it involves are both serious and important: how far it may be worthy of the public attention, time must determine;—as it embraces, however, a variety of new and striking facts, I flatter myself, it may be of service.*
>
> *Unknown as I am, to you, I cannot but apologize for the liberty of this letter:—but, my apology I have already hinted at; the importance of your name to an undertaking of this nature, in the New World.*
>
> *I have the honour to be, with the greatest respect—Sir, Your very humble Svt. B.S. Barton*[1178]

Barton's relations with Jefferson became friendly, although not intimate—many recorded that they knew Jefferson, but few knew him well. Shared was their zeal for correlating facts to use: Jefferson with a practical turn of mind sought new crop plants, whether moved from the woods and fields to Shadwell, or received in packets from France or Italy; Barton emphasized the part our flora might play in materia medica. The American Indians and their languages engaged both. Both had an interest in chemistry, Jefferson in having the subject taught generally so that more uses might precipitate out, Barton in minerals, their uses, and

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1178 Jefferson correspondence, LC.

compounds.[1179] Books[1180] united them. Each collected avidly, loaned to, or borrowed from the other.

Besides their common interest especially in Indian languages and fossils, about which they frequently corresponded, Jefferson consulted Barton whenever a plan involved natural history—whether it was natural history training for Lewis in preparation for his trip to the Columbia, or the choice of Peter Custis for his part in the Freeman-Custis expedition to the Red and Arkansas Rivers.[1181] He sought Barton's advice from Washington, 13 June 1805, on whether Robert Patterson should be the candidate to succeed Mr. Boudinot[1182] as Director of the Mint. Robert Patterson (1743-1824), a Scotch-Irish immigrant in 1786, served as professor of mathematics and natural philosophy at the University from 1779-1814, and as vice-provost for a period. He had been an active member of the American Philosophical Society since 1783, and served with Barton and Charles Willson Peale as curator, then for many years as a vice-president with Barton and Wistar, succeeding Wistar as president.[1183] Patterson became Director of the Mint. Jefferson concluded his letter to Barton with "My sentiments of esteem for you could not be satisfied without mentioning it to you."[1184] Making appointments was, Jefferson found, "by far the most painful of my functions."

Barton in turn wrote Jefferson on occasion on behalf of members of his family when positions opened in the government. William had aspired unsuccessfully to become a secretary to Jefferson, but as a result of Barton's petition won a clerkship later. Each left a legacy of letters, rich sources for aspects of their time. Jefferson's "superb letters—among them essays and short treatises on every possible subject and numbering into the thousands—were written with zest and frankness...on a number of subjects close to his heart."[1185]

Barton's letters show his ambition and plans—plans and promises he desperately hoped to keep, but so often failed. They show a breadth of interest in all the natural world, a pride in, and love of country. His handwriting deteriorating from the clear penmanship of his youth to become almost illegible with hurry, discouragement and gout, he wrote voluminously to family, far-flung correspondents in America, and to European savants, pressing questions, asking for specimens, and promising to return favors. In all, Barton and Jefferson shared hope for the promise of natural history in America. "What a field have we at our doors to signalize ourselves in! The Botany of America is far from being exhausted, its Mineralogy is untouched, and its Natural History or Zoology, totally mistaken and misrepresented," wrote Jefferson to President Willard of Harvard, 24 March 1789.[1186]

During the years in which Jefferson lived in Philadelphia, 1790-1793, and 1797 until the capital moved to Washington in 1802, there were opportunities for discussions beyond those offered at Society meetings. On 30 August 1793 Barton received an invitation from Jefferson at his home near Gray's Ferry in suburban Philadelphia to dinner at three o'clock "with a small party of friends," no doubt a welcome respite to the weary physician from the battle with the yellow fever epidemic that year. After a visit to "Mr. Bartram's garden" he dined with "Mr. Jefferson," Barton reported in his "Botanical Notes"[1187] for the day, omitting to mention whether Mr. Bartram was among the other guests, or who they were!

1179 F. A. Brasch in *Science* 97 (1943): 300-301.

1180 Sowerby, *Jefferson's Books*; Ewan, "Jefferson's books."

1181 Flores, *Custis*, 58-59, for Custis's appointment. F. Seip and G. Pendergast, also Barton's medical pupils, were first and second choice.

1182 On Elias Boudinot (1741-1821), uncle of Mrs. Rush, see Butterfield, *Rush*, 249 and passim; and Corner, *Rush*, 102, and passim.

1183 APS, "Minutes," passim; John R. Klein in *DAB*; Sellers, *Peale's Museum*, 12-14, and his portrait by Rembrandt Peale; the portrait at the APS.

1184 Barton papers, APS.

1185 W. D. Garrett, *Thomas Jefferson Redivivus* (Barre, Mass., 1971), 9-10.

1186 Browne, "Jefferson," 23.

1187 Barton papers, APS.

Barton proposed the commemorative name *Jeffersonia* for Twinleaf as a token of regard for his friend in a paper read before the Society 18 May 1792.[1188] André Michaux was in Philadelphia 25 April to 3 May and visited Barton 26 April and again 3 May.[1189] He is reputed to have collected (not "discovered") *Jeffersonia* "in the mountains of Virginia on an earlier journey, and to have brought some shoots to William Bartram in Philadelphia where Barton described it."[1190] Michaux's specimen in the Paris Museum is without date or locality, but was evidently collected in the autumn. One of two labels in Michaux's hand reads "Jeffersonia Barton."

Twinleaf was first described by Linnaeus in *Species Plantarum* (1753) as *Podophyllum diphyllum*. He therein credited its source as "Virginia Collinson." The sheet in the Linnaean Herbarium is annotated simply "Virginia" in an unidentified hand. Peter Collinson does not appear in that record. *Flora Virginica*, ed. 2 (Leiden, 1762), edited by Laurens Theodore Gronovius, includes a 7-line description, *Podophyllum foliis binatis semicordatis* ending with the citation, "Clayt. n. 854."[1191] This extended description suggests that Gronovius was stressing the Twinleaf as distinct from the well-known Mayapple (*Podophyllum peltatum*). That Collinson was not involved with its provenance is verified in Collinson's copy of the second edition of *Flora Virginica* where he annotated "Mayapple" for *P. peltatum* but has no marginal name for the second *Podophyllum*. Furthermore, Dillwyn in his *Hortus Collinsonianus* comments that Collinson left no mention of Twinleaf in his catalogue.[1192] In short, *Jeffersonia* was first known to John Clayton; Gronovius shared a specimen with Linnaeus, who mistakenly associated it with Collinson.

In reading his paper Barton said "I take the liberty of making it known to the botanist by the name of *Jeffersonia* in honor of Thomas Jefferson...especially for [his knowledge of] botany and zoology...equalled by that of few persons in the United States." The article appeared in *Transactions of the American Philosophical Society* 3 (1793): 334–337. The delay in the publication of the fourth volume until 1799 would, Jefferson hoped, give him time to report on fossils he was having excavated not far from his home. He wrote from Monticello 10 October 1796, also thanking Barton for his paper on the fascination of the rattlesnake, which had appeared that year, and sending greetings to Rittenhouse's daughter:

> *Monticello, Oct 10, 1796*
>
> *Dear Sir, Your favor should have been sooner acknowledged but that I have been in daily expectation of receiving some other bones of the newly discovered animal which would have enabled me to write to you more satisfactorily. There does exist somewhere a thigh bone which has been seen by many & is believed to be still in the neighborhood where found. This with the bones I have would enable me to give the actual stature of the animal, instead of calculating it on the principle of ex peede Herculean. It will not be long before the diligence which is using for the collection of these bones will produce all which are to be recovered: but I do not flatter myself it will be done by the time at which you suppose the new volume of transactions will be ready. But as I know that that may be delayed, and am anxious this discovery should appear in it, I shall use all the diligence I can to forward it. It has been indeed the most tremendous of animals.*[1193]

1188 APS, "Minutes," 206.

1189 *Proc. Amer. Philos. Soc.* 26 (1889): 68.

1190 Savage & Savage, *Michauxs*, 159.

1191 S. F. Blake, "Notes on the Clayton Herbarium," *Rhodora* (1918) 20: 21–28, 48–54, 65–73. *TL-2*.

1192 [L. W. Dillwyn] *Hortus Collinsonianus. An Account of the Plants cultivated by the late Peter Collinson, Esq. F.R.S....from the Catalogue of his Garden and other Manuscripts* (Swansea, 1843), 41. Not published. On Collinson and on Dillwyn see *TL-2*.

1193 Barton papers, APS.

Jefferson was referring to the paper he had prepared for 10 March 1797, the meeting at which he assumed the office of President of the American Philosophical Society, the first meeting he attended on his arriving in Philadelphia as Secretary of State. His paper "A Memoir on the Discovering of Certain Bones of a Quadruped of the Clawed Kind in the Western part of Virginia," was on the "Megalonyx," which he initially considered a member of the cat family, though later recognized as having affinity to Georges Cuvier's *Megatherium* (1796). Anatomists Caspar Wistar and Cuvier, to whom Jefferson sent bones, also recognized it as a giant ground sloth, related to the *Megatherium* first discovered in Paraguay in 1788. Jefferson's paper was submitted to the Committee on Publications, of which Barton was a member, requesting that they engage a suitable artist to depict the bones. C. W. Peale was to put the bones "into the best order for the Society's use."[1194] The paper finally appeared in the delayed volume four in 1799, its preface calling for further investigations.[1195] Jefferson was later honored in France for his insights in 1822 by Anselme Demarest naming his fossil *Megalonyx jeffersonii*. Importantly, Jefferson's paper established paleontology in the United States, with Philadelphia its leading research center.

Barton typically was enthusiastic about discoveries of plant and animal remains, having observed fossil plants and shells as early as his trip to the Ohio border in 1786, and he urged his correspondents to send him what they found. He lectured on the importance of the collection and study of fossils before the Philadelphia Linnaean Society, the talk published as *Discourse*, and characteristically he planned a book on the subject. On 13 July 1810, while botanizing in the Appalachians, he wrote a thirty-two page letter to Jefferson on the subject of "Elephas Mastodontus"[1196] and Elephas Primigenus,"[1197] which he had published in the *National Intelligencer* soon after, and which was republished in his *Archaeologiae Americanae* in 1814. He had published a preliminary account in a letter to Cuvier (1807). "I shall be much gratified if this letter, written among the mountains of your state, at a distance from my books and papers, afford you any amusement." Had he visited Monticello, or was he on his way there, and did he really send the letter to Jefferson?

On his journey to Virginia in 1802 Barton had visited Monticello; in 1805, when on his return he suggested to Bartram that Jefferson would like to leave the horns of the Stone buck;[1198] but not in 1806, when on 22 September Robert Fulton wrote to Charles W. Peale at the "Museum, Philadelphia," that "Mr. Barton is at Monticello, philosophizing with the President."[1199] Instead it was Pursh travelling for Barton.

Jefferson, involved with the affairs of state, relied on his fellow officer in the American Philosophical Society to get into print the results of their common interests—the Lewis and Clark Collections after Lewis's death, the Freeman-Custis, and Dunbar explorations. Jefferson wrote from Washington 12 January 1806 to William Dunbar (1766–1810), Scotsman, plantation owner near Natchez, surveyor of the boundary between the United States and Spanish possessions,[1200] "I enclose you Doctr Barton's account of the Botanical specimens you sent me from the Washita as it was material to have the map of the Washita ready drawn, engraved & struck off for Congress." Dunbar responded 18 March 1806, "I am greatly obliged

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1194 APS, "Minutes," 253. Sellers, *Peale's Museum*, 147–151.

1195 *Trans. Amer. Philos. Soc.* 4 (1799): 255–256. Simpson, "Paleontology," 178.

1196 [The Mastodon had been identified as *Elaphas americanus* by Robert Kerr in 1792, and *Mastodon giganteum* by George Cuvier in 1806. Its scientific name *Mammut americanum* credits the original fossil location.]

1197 [The Siberian Mammoth is *Mammuthus primigenius* J. F. Blumenbach, 1799, originally published as *Elephus primogenius*. Another Mammoth would later commemorate Jefferson: *Mammuthus jeffersonii* Osborn, 1922.]

1198 "Stone buck (*Capra cervicapra* ?)" relates to the first documentation of the Pronghorn, *Antilocapra americana* Ord, described later in 1815, of the Lewis and Clark Expedition. See Jackson, *Lewis and Clark*, 238, fn. 10. Barton discussed its history in *PMPJ* Suppl. 2 (1807): 194. Jefferson documents his alert interest in the animal in his letter to William Bartram 7 April 1805. [*Antilope cervicapra* L. refers to the Black (Stone) Buck of India. MSW.]

1199 Commarroe Autograph Collection, 7: 63, HSP.

1200 Franklin L. Riley in *DAB*.

by Doctor Barton's observations."[1201] How far Barton succeeded surfaces in his publications; some of his failures rest among his manuscripts. The tragedy for Barton was that he had not the finances, financial support, the time, nor the physical strength to accomplish all his own aims along with the tasks Jefferson committed to him. On one occasion Barton was impelled to write to a correspondent in Europe that it was much to be regretted "that the principal cultivators of natural science in the United States, are professional characters, who cannot, without essentially injuring their best interests, devote to these subjects that sedulous attention which they demand." In their early years of association, Jefferson had been impressed with the zeal and knowledge of his younger friend, and may well have had little concept of the drain on the time and energy he was placing on the physician-professor-naturalist with whom he shared so many interests. Barton himself, during the earlier periods when his health was more stable, and he was able to snatch time from the professions that brought him his livelihood, may not then have sensed that his own projects for publication were being hampered. In spite of all, great was the benefit of their association to both, and to our knowledge of the development of natural science in America.

Kindred with Jefferson in patience and tolerance, and especially in the study of fossil bones, was Dr. Caspar Wistar (1761-1818), a Quaker,[1202] five years older than Barton. After his return from medical studies at the University of Edinburgh, where he had served two terms as president of the Royal Medical Society and had helped establish the Natural History Society, Wistar was elected that same year to the College of Physicians and to the American Philosophical Society. On 5 October 1787 he presented a joint paper on "a large thigh bone found near Woodbury, Glocester County, N.J.," and the three authors were requested to search for missing parts of the skeleton.[1203]

Wistar became Shippen's adjunct in 1792; was elected Professor of Chemistry in 1789, succeeding Rush; and became Professor of Anatomy in 1805. He was probably the most popular teacher in the University. "He undertook everything with so much zeal, and such conscientious desire to benefit those who came to be instructed by him, that he seldom failed to give satisfaction."[1204] His extensive collection of bones, or enlarged carved models (some made by Rush), made his pupils enthusiastic in their study. In Wistar, Barton found kindred interest in books, botany, and bones. He was, indeed, an added influence in the development of Barton's deistic philosophy of life. Both Barton and Wistar were alerted to new books by John Vaughan, those for example that arrived at M'Mahon's seed store on Fourth Street or at other dealers.

Barton's nephew, William P. C. Barton, thought "such a man must make the study of anatomy a pleasure, and the hour of his prelection of mental repast." Wistar's manner, he found, was "kind very urbane," of "conciliatory attention, a considerate, patient and willing instructor with modesty and suavity of manner." His speech was "fluent, clear, concise, impressive, full of fire and enthusiasm." In person he was "fat, florid, powdered—a gay looking gentleman of low stature and clumsy form."[1205] Caldwell, who also knew him as professor and about town, confirms the impression that he was "singularly beloved and respected. In social, professional, and scientific life, his standing in the estimation of the community, was elevated if not pre-eminent." He was "the first person in Philadelphia to hold regular soirees, or evening conversation parties, of a literary and scientific character" where he was more "a listener than a talker. Yet his conversational powers [were] of a high order." He suffered "paroxysms of agitation...professing himself an apoplectic figure," but, "subsequently to the [mental] victory over an infirmity...he became one of the most fluent, self-possessed, and instructive lecturers...not however, one of the ablest." He did not keep appointments punctually; took

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1201 Rowland, *Dunbar*, 188, 191.

1202 Whitfield J. Bell in *DSB*; Francis R. Packard in *DAB*; Carson, *History*, 135-142.

1203 APS, "Minutes," 154.

1204 Carson, *History*, 93, 107, 135-142.

1205 Quoted in Pepper, "Barton," 404.

long times to diagnose; and, Caldwell thought, there were too many ingredients in his prescriptions. He charged too little, because he forgot to enter accounts; had an unsteady hand in surgery; and was always in a "hustle...without a moment of leisure...forever out of time"—his profession "had command of him—and dragged him after it."[1206] Had Wistar tried to curtail Caldwell's visits?

Student James T. Hubard described Wistar's course in a letter to his father in Virginia in 1796:

> *Dr. Wistar is certainly an eminent anatomist—His lectures on the Bones are equal it is supposed to those of Monro. There is a large Collection of anatomical preparations in the Theatre—Last Monday he began the Lectures on the Fresh Subject—He began first by dissecting the parietes of the abdomen. Here every muscle, was most beautifully dissected and Demonstrated—He is now demonstrating the abdominal viscera. Since I have attended the Lectures on Anatomy, I am fully convinced that a person can hardly acquire any other knowledge of the human Body by mere reading those names—*[1207]

Pupil Edwin LeRoy McCall remembered in 1804 that Dr. Wistar advised a little delay in dissecting "in order that the ardor of those who form the class, may have a little time to cool, which he says is generally in about a fortnight after they begin to dissect."[1208]

That Wistar firmly held that the student must personally carry out dissections in order to learn detail is also recorded in his letter of 14 December 1813 to a hesitant pupil, Charles W. Short:

> *I cannot give you any better opinion than I gave the class at large yesterday viz that gentlemen who intend to practice surgery will be much benefitted by dissections, but unless they can devote some time to the dissecting room they will derive no benefit from entering the class formally. I believe it will be easier for you to determine after you have seen something of the business & therefore I wish you to come to the Theatre at ten o'clock tomorrow & see the arrangements. After this go to the dissecting room at your leisure for a few days & you will then be better able to judge for yourself than any person can judge for you. With great regard C. Wistar.*[1209]

Wistar presented upwards of one hundred lectures on anatomy with demonstrations "from recent subjects" in addition to "the elegant preparations" of Dr. Abraham Chovet[1210] and the justly admired illustrations of John Fothergill.

On Wistar's death 22 January 1818, "¼ before 8 p.m.," Professor Thomas Chalkley James remembered that "his chief delight consisted in imparting useful & indispensible instruction in the most insinuating and impressive manner." When questioned about his hope of heaven, Wistar is reported to have said that "whatever the final result might be, he experienced the consolations of comfortable feelings. 'He taught us how to live, and oh too high, The price for knowledge, taught us how to die.'"[1211]

1206 Caldwell, *Autobiography*, 128–136.

1207 W. D. Hoyt, *Bull. Hist. Med.* 11 (1942): 584. Monro was a professor at the University of Edinburgh.

1208 In a letter to Kollock 24 Dec. 1804. *Georgia Hist. Quart.* 22 (1938): 349.

1209 Filson Club, Louisville, Kentucky, Archives.

1210 Abraham Chovet (1704–1790), born London, came to Philadelphia about 1744. A founder of College of Physicians; author of *A Syllabus, or Index, of all the Parts that enter the Composition of the Human Body...* (London, 1732). *DAB*; Morton, *Medical Bibliography*, 393; Kelly, *Cyclopedia* 1: 179.

1211 Thomas Chalkley James, Eulogy for Wistar. Gilbert Collection, CPSP. James quoted Edward Young, *A Letter* [in verse] *to Mr. Tickell: Occasioned by the death of the Right Honourable Joseph Addison* (London, 1719).

Caldwell delivered a eulogy, one of two before the Philadelphia Medical Society. According to him, "his was considered best in style and manner and most respectable." Justice William Tilghman's was fullest and best, because Mrs. B. of Princeton, relative of Wistar, gave Tilghman notes on Wistar, although Caldwell had requested them first, and so he felt cheated. He had included an example of Wistar's sympathy and generosity: "When a 'man of colour' handed Dr. Wistar a ten dollar bill for his medical services, Wistar took from his pocket a ten dollar note and told him 'now you have twenty dollars. Go home and make good use of them and let me hear from you again, should you in any way need my assistance.'"[1212] Corrêa da Serra left a manuscript obituary of Wistar with the finale, "cet flamme, savant, simple, doux, bien faisant, toujours raison noble." Wistar was the author of the first native compendium on anatomy,[1213] published in Philadelphia in 1811, with a second edition in 1814. Wistar succeeded Franklin, Rittenhouse, and Jefferson as president of the American Philosophical Society in 1814.

In 1792 Wistar, Patterson, and Barton were to propose and enforce certain library regulations for the American Philosophical Society. They proposed a system of fines, revised them, and finally charged according to the size of the book! From that year until 1794 Wistar served with Barton and Peale as curators, then in 1795 he was elected a vice president. In 1798 he was appointed with Barton, Smith, Patterson, and Joseph Hopkinson "to prepare for publication such papers as are or may be worthy of appearing," presumably at that time, in the fourth volume of the *Transactions*. Approval of three of the committee was necessary for publication. Both Wistar and Barton served frequently on committees to judge the merit of papers presented for publication. Dr. Schultz's memorandum on noxious plants submitted in 1798 was not recommended for the *Transactions* by the committee of Barton and Adam Seybert, Philadelphia's leading mineralogist, nor was Lyman Spalding's essay on "An attempt to explain the origin of meteoric stones," in 1810.[1214]

We find little record of Wistar's feelings toward Barton, with whom he shared so many committee meetings for the American Philosophical Society, and in the halls of the medical school. Wistar published few articles, and Barton gave to the public information he had added from Wistar's knowledge of the fossil sloth, elephant, and peccary, to what he had gleaned from whatever observations he had made or learned from correspondents. They both came to clash with Rush over medical practices, especially over the treatment of yellow fever. With Jefferson, Wistar's disappointment grew over Barton's failure to complete his promised natural history accounts, but he may have understood more sympathetically than other members Barton's decline in personality over the years under stress and frustration.

After Jefferson presented his paper on Megalonyx, he turned the bones over to Caspar Wistar who, from his background in anatomy and after careful study, identified the animal as an extinct ground sloth related to Megatherium, described earlier in 1798. The species was later credited to Jefferson by French naturalist Anselme Demarest, as *Megalonyx jeffersonii*, in 1822.

Wistar's classic article, "A Description of the Bones Deposited by the President, in the Museum of the Society...,"[1215] followed Jefferson's in volume four of the *Transactions* (1799). Jefferson also appealed to Wistar for identification of fossils found by Lewis and Clark, and others. Wistar's work on the fossils of Big Bone Lick[1216] place him as the first scientific paleontologist in the United States. In 1806 he identified puzzling fossils from Kentucky as

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1212 Charles Caldwell, *An Eulogium on Caspar Wistar, M.D.* (Philadelphia, 1818), 12.

1213 *A System of Anatomy for the Use of Students of Medicine* (Philadelphia, 1811–1814, 2 vols., and 1817, 2 vols.)

1214 APS, "Minutes," passim.

1215 [*Trans. APS* 4(71): 526-531.]

1216 [Including the extinct Woodland Muskox *Bootherium bombifrons* Harlan (1825), the Stag-Moose *Cervalces scotti* Lydekker (1898) as well as the extinct proboscidean *Mammut* Blumenbach (1799) and *Mammuthus* Brooks (1922). ZOOBANK.]

similar to the peccary.[1217] Although Wistar made one visit to Washington to confer on the Lewis and Clark fossils, he seems never to have visited Monticello.

Charles Willson Peale had greater kinship with Wistar, both as his physician and adviser, than with Barton, who so often wanted to lure away specimens for study. Wistar's death in 1818 deprived the museum of one of its most devoted and enthusiastic members. The Doctor was amused by Peale's own cure for a cold: running uphill with the mouth open. And he was impressed with his motto: "Keep the mind in a quiet and tranquil state...in short...do nothing that is useless." Since he had not received a chit from Wistar for medical attention, the grateful patient enclosed twenty dollars "on a supposition of that being your charge on such occasion—please to inform me if I am wrong. I do not consider it any equivalent reward for your care & attention as a Physician—your esteem is of much more value than my pecuniary consideration."[1218]

Jefferson concluded his letters to Peale usually with a little more warmth than those to Barton. "I salute you with great and affectionate esteem," on 5 October 1803; "I salute you affectionately," 5 November 1807; and "I salute you with great friendship," 1808. "Were a ramble to lead you to Monticello, we should all receive you with open arms & hearts," 10 March 1809; and "Be always assured of my great esteem and respect," August 20, 1811.[1219]

On New Year's Day 1791, the Society, now meeting in its new and present building, appointed Barton one of the curators, along with Charles Willson Peale (1741–1827), a member since 1786 and already a curator, and Dr. Samuel Duffield (1731–1814), who had been a member since 1768 and remained on the committee until 1792 when he was succeeded by Wistar. Duffield had been a member of the first graduating medical class of the College of Philadelphia.[1220] Peale, soldier in the Revolution, politician, skilled craftsman, but more famous as a painter of portraits of so many leading Americans of the period,[1221] had settled in Philadelphia after study with Benjamin West in England. In 1784 he opened his Museum, at first in his home, then moving in 1802 to the Statehouse, where he exhibited his carefully prepared animals in representations of their native habitats, an initiator of that method of display (Figure 30).

There had been in Philadelphia the unsuccessful attempt by Pierre Eugene du Simitière (1736–1784),[1222] Swiss artist and naturalist, to establish a historical and natural history museum. He had traveled in the West Indies, 1755–1765, then tried to establish himself in New York and Boston before settling in Philadelphia. A member of the American Philosophical Society, attending meetings as early at 1770, from 1776 until 1781 he was a curator. In 1782 he opened his American Museum at Arch above 4th Street. Foreseeing what he considered the probable extinction of the American Indian, he began to collect artifacts, and he preserved relics and newspaper accounts of the Revolutionary War. Du Simitière's failure in this time of the country's turmoil might have discouraged another, indeed Rittenhouse had tried to discourage Peale, but with Patterson's encouragement, in 1786 Peale advertised his Museum with a newspaper notice, inviting viewers to the "wonderful works of Nature," and welcoming donors for such curiosities as they might contribute. Freaks of nature, however, which the sideshows of the time were featuring, were not wanted, "but such is the bewitching study of nature, that it expands the mind, to embrace object after object, and desire is still fed in an endless maze and contemplation of the wondrous works of Creation," so wrote Peale, in his "Autobiography."

1217 [Now known as the fossil flat-head peccary, *Platygonus compressus* LeConte, 1848. PAL.]

1218 Peale papers, Letterbook (1804), 168–170, APS. Sellers, *Peale*, 1: 316.

1219 Boyd, *Jefferson Papers*.

1220 Ruschenberg, *Physicians*, 221.

1221 Pace, *Castiglioni*, 308, fn. 19. Castiglioni reappraised Peale's artistic talents from his first opinion: "a mediocre American painter."

1222 Joseph Jackson in *DAB*; Huth, "DuSimitiere," 315–325.

Exhibits overcrowded Peale's Museum from 1787, the year in which George Washington sent Peale a pair of Chinese Golden pheasants. First as an annex to his house at Third and Lombard Streets, accessions to the Museum were added by the family: a son returned from Annapolis with a pelican, a swan, a mink, several kinds of ducks, and so on. And there were donations from sea captains: for example, Capt. John O'Donnell of the *Pallas* brought exotic insects from his voyage to the East Indies, and Capt. Bell a wandering albatross from his seafaring. Physicians, too, contributed: in 1790 Dr. John Foulke brought Peale a female opossum with nine young.[1223] Peale solicited Dr. David Ramsay of the Charleston Museum to send a stuffed alligator. Such friends as David Rittenhouse and Andrew Ellicott had found fossil teeth on the upper Susquehanna, and there were other offerings.[1224] Feeling the financial pinch that goes with a growing collection, Peale hoped a plan would work toward greater financial support: the formation of a board.

> *Therefore he* [C. W. Peale] *waited on several gentlemen who met at Peale's Museum, Phila. Feb. 5th, 1792, intered into a book as follows viz.*
>
> *At the request of Mr. Charles Willson Peale, the Right Rev. Dr. White, D M Collin, the honorable Mr. Page, and Mr. Madison, Mr. William Bartram, Doctor Barton, Mr. Bordley, Mr. Patterson, Doctor Hutchinson, Doctor Wistar, and Mr. Hazard, meet him at the museum, and agreed to accept of Mr. Peale's Invitation to form themselves (together with other persons named) into a Society of Visitors and Directors for promoting the interest of the Museum.*
>
> *Whereupon Mr. Peale advised them as follows (This address is in a Book, and if advisable published) and on concluding his address he laid before these visitors a list of names of gentlemen who had promised him that they would accept his invitation and become Visitors and Directors as aforesaid, which are as follows* [27 names followed[1225]]...
>
> *The visitors then appointed Doctor Collin, Doctor Barton, Mr. Rittenhouse, Mr. J. B. Smith and Mr. Bordley to be a committee to prepare and report such regulations respecting the Institution as they shall think best calculated to promote its advancement, and then adjourned.*[1226]

Jefferson was unanimously chosen chairman. "Visitors shall hold four stated meetings a year." Barton missed the meeting of March 8, 1792, held to consider Peale's proposed address to the state legislature requesting governmental financial support.

1223 Drawing of Peale's opossum exhibit of 1790 by the English artist, Charles Burton is in Sellers *Peale's Museum*, 39.

1224 Sellers, *Peale's Museum*, 26.

1225 The 27 individuals involved in the first board of the museum were primarily members of the American Philosophical Society:

John Francis Mifflin, Peale's lawyer; John Page, Congressman and governor; Miers Fisher, prominent Quaker; Robert Patterson; David Rittenhouse, recorded Transit of Venus in 1750s; William Barton; Benjamin Smith Barton; Beale Bordley; Nicholas Collin; Ebenezer Hazard; John Vaughan, later president of the APS; Henry Hill; Michael Hillegas, Continental Treasurer, 1776-1789; Dr. James Hutchinson, Peale family doctor, Prof. of chemistry and secretary of the APS; Caspar Wistar; Samuel Powel Griffitts, founder of the Philadelphia Dispensary; William White, chaplain to Congress, Episcopal bishop of PA; Thomas Jefferson, Secretary of State (U.S.); Alexander Hamilton, Secretary of the Treasury (U.S.); Edmund Randolph, Attorney General (U.S.); James Madison, Senator (PA); Robert Morris; William Bingham; Thomas Mifflin, Governor (PA); Alexander James Dallas, Secretary of the Commonwealth (PA); Jonathan Bayard Smith, Auditor General (PA), Philadelphia Alderman. Eleven members (Both Bartons, Bordley, Collin, Hazard, Hutchinson, Madison, Page, Patterson, White, and Wistar) met on Feb. 5, 1792 to adopt the constitution for the governing board. Thomas Jefferson was elected president of the board on Feb. 14, 1792. Alexander Hamilton presided in Jefferson's absence.

1226 Peale papers, C. W. Peale, *Autobiography*, pt. 2, 191-193, APS. Sellers, *Peale's Museum*, 61.

Barton disappointed Peale in his not working actively to promote the museum by helping to solicit funds. Barton seems not to have attended further board meetings, although he appreciated the need for the museum, and visited frequently. He was having his own financial problems.

One would think, and no doubt the membership of the American Philosophical Society did think, that having two naturalists with supposedly like interests on the same committee as curators, they would work together expeditiously. Both were determined men with set plans. Peale was interested in presenting an animal for public display, either alive in a cage or skeletized and stuffed. Barton wanted it alive for quiet study, or in dissection so that he could report in detail to the scientific world in a published paper. Both were hard pressed for time, and getting together to work on the Society's accumulation of years past was not easy. The work of ordering up specimens after the move to the new building did not proceed as smoothly as hoped. Over the years there was also a recurring problem of which curator the specimens submitted to the Society or Museum were meant for.

Peale solicited Swedish "productions" in exchange for American in a letter to the Royal Swedish Academy of Science, 11 May 1791, at which time he sent a small collection of American birds. He wished particularly to illustrate the Old World representations of the several groups in order to refute Buffon's claim that American animals were inferior. It was a particular anguish for Peale that he suspected Barton of diverting birds sent on behalf of the Royal Swedish Academy.

Was it publicly to settle ownership that Nicholas Collin on 2 June 1793 published an announcement that the Swedish Academy of Sciences at Stockholm had gratefully acknowledged birds Peale had sent, and Mr. Gustavus von Carlson had sent in exchange "several of the most valuable Swedish Birds, such as *Urogallus major* and *Urogallus minor*, the Lagopus, etc.," and that "The [Swedish] Academy takes a lively interest in the success of your Museum"?[1227] In Peale's *Guide to the Philadelphia Museum* ([Philadelphia,] April 1805) there appears a footnote on page 6 that does not appear in the 1804 issue: "To prevent mistakes, all donations intended for the Philadelphia Museum, should be directed to C. W. Peale, with such memorandums as are interesting, and the name of the Donor." Barton, already a correspondent of the Swedish Academy, had taken possession of the birds mentioned above, whether innocently or not, and Peale accused him of appropriating the bird skins. Years later Peale still remembered bitterly that:

> *Although many of the gentlemen who composed the list of Visitors and Directors were highly accomplished characters...*[they found it difficult to attend the meetings, and so Peale] *lost all hope of any financial aid to help him. But what mortified him, was, on finding one gentleman of the Board, whom Peale thought he did him honour by asking him to become a member of the Society, did actually arrest articles coming to the Museum, and he feels much regret that he should have occasion to name a Man whose family he had long entertained in high regard, but Doctor Benj. Barton in seeking to get a high character and renown as a Naturalist never scrupled to take the feathers of others to enrich his own Plumage. Doctor Barton undoubtedly possessed high talents as a writer, and he was also persevering in his research to investigate natural Phenomena, yet he had not the generosity or liberality to give to others the credit of their labours,*

[1227] *Lagopus lagopus* L. is the Dalripa in Sweden. The circumpolar Willow ptarmigan is *Tetrao urogallus* L., the Tjäder in Sweden, the large fan-tailed grouse famous for the males' courting display while perched in trees of the coniferous woodland. It occupies the ecological niche of the North American Blue Grouse [*Dendragapus obscurus* Say]. The Black Grouse of northern Europe, Orre in Sweden, is *Lyrurus tetrix* L., the cock glossy iridescent black in plumage with a lyre-shaped tail. Collins's announcement appeared in Dunlap's *American Daily Advertiser* for Monday, 30 December 1793. APS.

> *researches and discoveries, his passion for renown was so powerfull, that he did not scruple to borrow all he could to enrich publications on natural history.*

Of a later occasion, after Barton's death, he wrote:

> *When he* [Peale] *was in Washington Mr. Fitzchew asked him about a piece of wax-work made by his grandmother Mrs.* [blank] *expressly to be placed in this Museum, that her Grandchildren might see it after her decease. It is a wonderful imitation of the flowers in her neighborhood, of extraordinary merrit. It was brought from Virginia by a student coming to the Lectures of the Medical school and put into the hands of Doctor Benjamin Barton, and the Doctor did not deliver it, but when Peale called on the widow and showed a letter on the subject that lady did not hesitate to let it go to the place of its destination. Mrs. Barton said her husband was a Botanist and she had imagined that it belonged to him.*[1228]

Barton, on the other hand, learned on inquiry that the fossil tooth of a large mammal he had sought from his brother, Richard Peters Barton near Winchester, Virginia, had been readdressed by the postmaster so it was received, not by Barton, but by Peale. Yet Barton appreciatively acknowledged Peale's contribution in his letter to Lacépède:

> *On this side of the Atlantic we also are doing something; as much, perhaps, as could be expected from us. The museum, founded by our countryman Mr. C. W. Peale, is very respectable, both for the number and value of the articles which it contains. Within the last three or four years several new species of quadrupeds, or mammalia, have been discovered, and our knowledge concerning other species has been greatly extended.*[1229]

Again Barton wrote in 1807, "There is already established among us, a Museum of great value; and which does honour to its founder, and even to the United States; a museum to which every American citizen should endeavour to contribute his mite of support."[1230] Since he was lecturing to the Philadelphia Linnaean Society, he felt no need to name its founder.

Barton frequented the Museum, sometimes taking his natural history classes, a visitor to the city, or to study for himself a new acquisition. Into his zoological notes went "March 26th. 94. I gave Mrs. Peale's elk some leaves of the Tanacetum vulgare. She took them into her mouth but soon spit them out again." The elk preferred weeping willow, and after some of that ate a little of the tansy "but it was evident, she was not fond of it." Then on 15 April he made another visit and the elk "readily" ate a small branch of lilac (*Syringa vulgaris*). Peale was interested in the possible domestication of the American elk[1231] and had one at his farm, where it worked a stint on a treadmill pumping water.[1232] On one occasion Peale lent Barton a squirrel skin, which Barton requested William Bartram to draw for him.

Peale, twenty-five years older than Barton, was often amused at his young visitor and co-curator. Although he had published on the "Fascinating faculty" of rattlesnakes, Barton still had his own fascination with them, though he admitted he could never learn to like them. He

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1228 C. W. Peale, *Autobiography*, pt. 2, 427. APS.

1229 *Philos. Mag.* 22 (1805): 97.

1230 Barton, *Discourse*, 70-71.

1231 [*Cervus elaphus* L., 1758. MSW.]

1232 Barton papers, APS; Sellers, *Peale's Museum*, 104.

was present when some live rattlers were brought to the Museum in 1797, and Peale remembered that young Dr. Barton was there seated on a table at a safe distance.[1233]

Two weeks after his appointment as curator at the American Philosophical Society serving with Peale and Duffield, Barton took charge of articles of natural history "from the Western Territory" that had been displayed for examination, along with a report by Benjamin Elliott. The competition between the scientist and the museum man hindered progress, and Barton was not re-elected a curator in 1801, but the following year became a vice president (Jefferson the president) serving in that office until his death. For twenty-five years Barton was one of the Society's staunchest members, unpleasantly dictatorial in his later years, yet the most important contributor of papers on natural history.

Peale found an assistant in a knowledgeable French refugee who had recently settled in Philadelphia and was playing the French horn in local orchestras. Baron Ambroise Palisot de Beauvois (1752-1820)[1234] had collected plants in West Africa, sending some of his *naturalia* to Paris, but on becoming ill he was sent to Haiti to recover. He first arrived in Philadelphia in January 1792 and was elected to the American Philosophical Society, attending the meetings whenever he was in the city. He returned to Haiti in June 1793 to find his house ruined and his natural history collections destroyed. As a nobleman he was not welcomed back to the new French Republic, so he returned to Philadelphia, was received as a guest of Wistar, and was soon taken on by Peale. With Peale in 1796 he composed *A Scientific and Descriptive Catalogue of Peale's Museum* (Philadelphia, 1797), but as Peale was not able to cover the costs of publication for the whole work, only one part, 44 pages, was printed.[1235] Beauvois became acquainted with Barton and presented him with a watercolor drawing of the nest of *Vespa maculata*[1236] (Figure 64). Palisot de Beauvois collected as far south as Savannah in 1796, where he met André Michaux. He returned to France in 1798.

To raise money to keep the Museum afloat, Peale gave lectures in 1799-1800, and 1800-1801, in Philosophic Hall, illustrating with museum specimens. Then, in 1801, two years after the discovery of mastodon bones on a farm in Orange County, New York, he organized an expedition to exhume the skeleton, to finance which the American Philosophical Society made him a loan. Rembrandt Peale (1778-1860), his oldest son, a skilled artist, painted the famed picture of the work in progress, "Exhumation of the Mastodon," which hangs in the Peale Museum in Baltimore. The missing parts, with Wistar's help and advice, Rembrandt replaced mostly in wood. This was the first mounted fossil animal in the United States, the second in the world.[1237]

Local excitement and enthusiasm over the discovery of the huge mammal led to a successful exhibit in New York, where Rembrandt and Rubens Peale (1745-1865) netted $2,000. They proceeded to England, Rembrandt, then twenty-four, with his wife and two daughters, and Rubens, aged eighteen. After landing in Brighton they toured the countryside before reaching London, where they stayed from September 1802 until June 1803. Rembrandt wrote his father that the British public would much prefer a dancing bear to his scientific curiosity. Rubens delivered thirty-two bird skins to Dr. John Latham, eminent ornithologist, author of comprehensive works. Both Rembrandt and Rubens visited Sir Joseph Banks,[1238] then president of the Royal Society, at his Soho home with its magnificent library.

1233 Sellers, *Peale's Museum*, 91.

1234 A. M. F. J. Palisot de Beauvois, versatile French naturalist, see *TL-2* under Palisot de Beauvois; Merrill, "Palisot de Beauvois." Sellers, *Peale's Museum*, 83-85, portr.

1235 First published in French as *Catalogue Raisonné du Muséum de Mr. C. W. Peale...* (Philadelphia, [1796]) by Beauvois, then in English by Peale and Beauvois (Philadelphia, 1796), i-xii, 1-44.

1236 Paper-making White-faced hornet, now known as *Dolichovespula maculata* L.

1237 Sellers, *Peale's Museum*, Chapter V. "Exhumation" illustrated, 134-135.

1238 Rembrandt's portrait of Joseph Banks, commissioned by his father for his museum, reveals Banks's "Benignity and intensity." The portrait hangs today in the library of the ANSP. Hevner & Miller, *Rembrandt Peale*, 40-41, 97.

Paris was closed to them because of conflict between France and England, and so they returned to Philadelphia, arriving in November of 1803. Peale was disappointed with his son's accomplishments in bringing back specimens, making contacts for exchanges, and in the debts accumulated. Benjamin Rush had advanced money for the tour, and recorded, 29 July 1803, that the Peales's costs had come to $2,000.[1239] Rembrandt then toured the South with some success. Peale was to find the United States was not ready to support a National Museum, just as Barton was to learn that not enough of its citizens were ready to create a market for natural history books. Peale and his sons struggled on for some years, but finally the Museum closed.[1240]

Peale's problem was not unique to the New World. When Dr. John Hunter's museum in London came up for public purchase, Mr. Pitt, when appealed to, replied, "What! buy preparations! Why I have not money enough to purchase gun-powder." Hunter had spent over £70,000; Parliament in 1799 voted £15,000 for his collection.[1241]

Peale may have hoped that greater financial support would come from members of the Philadelphia Academy of Fine Arts, which he helped establish in 1805, and from members of the Academy of Natural Sciences, founded in 1812, of which he was an early member and curator. Both institutions flourish today. Peale turned over the directorship of the Museum to Rubens in 1810. Two years before their trip to England, Rembrandt painted Rubens beside a pot of geraniums, noteworthy as the first to be grown in America.[1242]

These were the men: Collin, Jefferson, Vaughan, Patterson, Wistar, and Peale, with whom Barton was to spend many hours in the activities of the American Philosophical Society. Through the Society he would make so many other essential contacts, at home and abroad. Other early corresponding members and sources of information for Barton were Henry Muhlenberg, Cutler, Peck, Belknap, and Mitchill.

Priestley and the American Philosophical Society

The most significant event of 1794 for the intellectual community of Philadelphia was the arrival of the well-known British scientist, Joseph Priestley (1735–1804), a member of the American Philosophical Society since 22 January 1785.[1243] Rittenhouse was on the welcoming committee—Barton also? At Dr. Wistar's dinner party in 1803 or 1804, Silliman remembered Priestley: "In person he was small and slender...his dress was clerical and perfectly plain. His manners were mild, modest and conciliatory..." In these later years he was also toothless and had a slight stutter, but he still moved his audiences. Born in Yorkshire, son of a cloth dresser, Priestley became a preacher in Nantwich, Cheshire, and when twenty years of age conducted a private school. He then became tutor in several languages at Warrington's Dissenting Academy, his Calvinistic upbringing having given way to a more rational Christianity. John and William Vaughan were pupils. He was succeeded by Johann Reinhold Forster (1729–1798), who was to accompany Cook's Second Voyage as naturalist.[1244] From 1772 until 1780 Priestley was librarian and tutor in the Leeds household of William Petty, Earl of Shelborne, with

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1239 Rush papers, HSP. The exhumation of the mammoth—Rush, Barton, and 24 others were solicited—cost $2,000. Sellers, *Peale's Museum*, 130 and 346 fn. 15.

1240 Sellers, *Peale's Museum*, Chap. IX.

1241 George Thomas Bettany, *Eminent Doctors: their lives and their work*, ed. 2 (London, 1885) 1: 158.

1242 Sellers, *Peale*, 6, and *Peale a Biography*, 302. For significance of the importation of *Pelargonium zonale* (L.) L'Hér. from South Africa see Anonymous, *From Seed to Flower*, 24, illus. 27.

1243 John F. Fulton in *DAB*; Robert E. Schofield in *DSB*. A. D. Orange, *Joseph Priestley: an illustrated life of Joseph Priestley, 1733-1804* (Aylesbury, Bucks, 1974), illustrations of his homes, experimental equipment, current cartoons, several portraits and sculptures, and of Mrs. Priestley and Franklin. Emphasis on his early life in England; only pp. 44–45 deal with his American stay. APS, "Minutes," 129, Jeremy, *Wansey*, passim, and 150–156.

1244 Warrington Academy was a subscriber to Forster's *Observations made during a Voyage round the World, on Physical Geography, Natural History and Ethic Philosophy* (London, 1778).

whom he traveled on the Continent meeting prominent persons. In 1780 he moved as minister to Birmingham where he participated in meetings of the Lunar Society, among whose members were Erasmus Darwin, Josiah Wedgewood, James Watt, and William Withering. John Playfair, one of Barton's admired Edinburgh professors, did not hold a high regard for Priestley. After meeting him he noted that Priestley's "conversation has nothing in it very memorable." On politics "he has the same violence with his brethren, and savours not much either of soundness of head or extent of information." It was Priestley's sympathy for the American Revolution that primarily endeared him to Philadelphians. His support of the French Revolution would especially have repelled Playfair, who concluded, "one is not much disposed to consider him a person of first rate abilities. The activity, rather than the force of his genius, is the object of admiration."[1245] In 1791 during a celebration of Bastille Day, in which he did not participate, an angry mob destroyed his home with its books, laboratory equipment, and manuscripts for his "heresy" and sympathy with the French revolutionaries. Mrs. Priestley's family and friends sequestered the unfortunates and, since conditions did not improve, made possible their emigration to the United States on the ship *Samson*. With Mrs. Priestley, their four children, and an impressive number of wooden boxes, they arrived in New York 4 June 1794 to join a settlement of English dissenters on 300,000 acres on the upper Susquehanna River Valley about Northumberland. This asylum in the beautiful, little developed wilderness had been established through the efforts of John Vaughan, now treasurer of the American Philosophical Society, and the agitator Thomas Cooper,[1246] and others. After two weeks in New York where among others he met Samuel L. Mitchill, Priestley was "received with the most flattering attention by all persons of note,"[1247] though not universally. Among those who did not welcome him to the United States was William Cobbett, "Peter Porcupine," who published anonymously his *Observations on the Emigration of Dr. Joseph Priestley, and on the several addresses delivered by him on his arrival in New York* (Philadelphia, 1794). The text had been rejected by Matthew Carey, but Thomas Bradford agreed to bring it out only after Corbett agreed to drop the original title "The Tartuffe Detected." Peter Porcupine's attack on Priestley finally went into six printings.[1248]

The family arrived in Philadelphia 20 June, and stayed at first with Rittenhouse. Rush hastened to pay his respects, and on 3 July he and Priestley had "a highly instructive conversation." In September Priestley wrote Rush from Northumberland, and repeated what he had written to Barton, that he "had not in this country met with any person whose mind seems so congenial to my own."[1249] As they came to know each other's philosophy, admiration diminished. Among political leaders, Priestley was introduced to Thomas McKean, Governor of the State, George Washington, and John Adams. While abroad Barton in London may have met Priestley, who made frequent visits to the city, but now he left himself a memorandum that greatly influenced his publication activities.

> *Tues. June 24, 1794. I paid a visit to Dr. Joseph Priestley at his lodgings, in 3rd Str. Thinking of Dr. Franklin, he said it was a good practice, which Franklin had, to withhold from the public nothing valuable, nothing new, in Science. In other words, he said, or intimated, that it was a good practice to lay our discoveries in science before the public, immediately.*[1250]

1245 John Playfair, *Words* (1822): lxxxvii–lxxxviii.

1246 Thomas Cooper (1759–1839), born England, attended Oxford and practiced law. Came to the United States in 1793 and settled near Priestley in Northumberland, Pennsylvania. He was elected to the APS in 1802 (APS, "Minutes," 320). His career is told by Dumas Malone in *DAB* and by E. L. Scott in *DSB*.

1247 Fulton & Thomson, *Silliman*, 27.

1248 M. L. Pearl, *William Cobbett, a bibliographical account of his life and times* (London, 1953), 21–22. "Tartuffe," Molière's religious hypocrite in a play of 1664.

1249 Schofield, *Priestley*, 281.

1250 Barton, miscellaneous papers, APS.

At another time Priestley had said "When I made a discovery I did not wait to perfect it by a more elaborate research, but at once threw it to the world, that I might establish my claim before it was anticipated."[1251] Barton remembered this advice, lack of financial backing delaying his major efforts–his work on the American Indian, his Zoology, and his Flora. It was an impetus to his initiating his *Philadelphia Medical and Physical Journal* in 1805.

Priestley had expressed his Unitarian views in his *History of the Corruption of Christianity* (Birmingham, England, 1782), which had been officially burned in 1785. He continued to write on theology through 1803, and told Rush that he believed only in the Being of God, but not in a future state. He lectured in Philadelphia on religious topics from 14 February 1796, with President John Adams and members of the Congress in the pews at Universalist Church on Lombard Street. This led to the founding of the Society of Unitarian Christians on 12 June that year, the first permanently established Unitarian congregation in the New World. His *Discourses relating to the Evidences of Revealed Religion* (Philadelphia, 1796) was followed by *Unitarianism explained and defended: in a discourse delivered in the church of the Universalists, at Philadelphia, 1796* (Philadelphia, 1797). John Adams's religious beliefs led him to an assurance of life hereafter, yet, shocking to the orthodox, he once stated the world would be better off if there were no religious sects. Although at first an admirer of Priestley, his ardor finally cooled. Priestley found Rev. Nicholas Collin "almost" a Unitarian, and with Barton he found a community of interests. In an address to his graduating medical pupils Barton had stated that "the studies of the physician, and especially of the naturalist are peculiarly favourable to the existence & the spread of a short solemn species of religion which arises out of the contemplation of the works of nature."[1252] In an undated memorandum, perhaps of a talk on a visit to Union College, established in 1794, he expressed himself:

> *Union College, Liberality of the Americans in matters of Religion. A circumstance extremely honourable to the country gave name to this seminary: I mean the union of various denominations of Christians in its establishment. It received contributions from men of every opposite religious sentiments, who had the good sense to perceive, that literature and science ought to be the children of every religion, and who could not be ignorant.*[1253]

One interested member among Priestley's listeners was John R. Davis, visiting from Boston. He reported to Belknap 27 February 1796:

> *I went last Sunday to hear the celebrated Priestley. From this passage of Scripture 'He had shewed thee O! Man what is good'–he took occasion to exhibit the superior advantages of revealed over natural religion–From a view of the religious and moral state of the heathen world, he inforced the necessity of shewing to Man what was good, and made many observations to remove the common prejudices against the modes by which the Deity at different periods has exhibited himself to mankind. The discourse was interesting and impressive, and excited the deep attention of a very numerous audience–He will continue his discourse I am informed for several months until he has delivered a series of sermons on Evidence of revealed religion–*[1254]

1251 Fulton & Thomson, *Silliman*, 27.
1252 Barton papers, APS.
1253 Barton papers, APS.
1254 MHS.

Priestley's *Theory of Language, and Universal Grammar* (Warrington, 1762) allied his interests with those of Jefferson and Barton. His *Essay on the First Principles of Government* (London & Dublin, 1768) suggested the theme "The greatest happiness for the greatest number." With support from Franklin in London in 1765, he had published *The History and Present State of Electricity* (London, 1767), and was elected to the Royal Society. *History and Present State of Discoveries relating to Vision, Light, and Colours* (London, 1772) was followed by his discovery of oxygen, his phlogistic theory, the significance of which he did not fully comprehend. He isolated and identified ammonia and a number of other gases, extended the knowledge of photosynthesis, and defined the role of blood in respiration. Most of these discoveries[1255] were made while in the household of the Earl of Shelborne. Barton attempted to explain to a class his understanding:

> *Dr. Priestley, in a very late publication, thinks that the following are the elements which compose all natural substances: viz. dephlogisticated air, oxygenous gas, or vital air, the acidifying principle; phlogiston, or the alkaline principle, called also the principle of inflammability; the different earths, and the principles of heat, light, and electricity. Besides these, Dr. Priestley mentions the following principles which, he observes, have not been proved to be substances, viz. attraction, repulsion, and magnetism...*

In a lecture before another class, Barton showed the influence of his meetings with Priestley at the home of his uncle David Rittenhouse.

> *Gentlemen, the great author of the universe has endued the particles of matter with a force of mutual attraction...a force by which the particles of bodies are attracted towards each other. All the phenomena of nature are dependent on this law...that masses must have formed by their reunion, and that solid and compact bodies must have been insensibly constituted.*
>
> *This force of attraction equally pervades the smallest particles of matter, and those huge masses of the globe which are formed by the reunion of these particles. Without this force, the beautiful harmony of creation could not be preserved. It would seem that the laws of this force are either essentially different, or differently modified, according to the mass, the bulk, or the resistance of the bodies acted upon by its force.*[1256]

When proposed for the presidency of the American Philosophical Society on the death of Rittenhouse, Priestley declined, since he believed an American and not a foreigner should be chosen. Of Rittenhouse he had written to Barton "we have all had a great loss...the more I saw of him the more I was pleased with him." He was also invited to become a minister, and to fill the Chair of Chemistry, but he declined both.

He and Mrs. Priestley knew their resources would not support them in the city. Fortunately they found contentment in the beautiful countryside, although Priestley missed the contact with professionals and particularly his English associates, but he visited Philadelphia at least in 1796, 1797, 1801, and in 1803, when the Society gave a party to celebrate his seventieth birthday. After 1797 he enjoyed lively conversations with Jefferson in Philadelphia, but he did not visit Monticello. To Priestley during his visit to the city in 1801 Jefferson wrote, "Yours is one of the few lives precious to mankind, for the continuance of which every thinking man is solicitous."

Barton's contacts were frequent, whether by letter or Priestley's visits to Philadelphia. Priestley often stayed with the Rittenhouses, and Barton was then a partaker in the

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1255 Gibbs, *Priestley*, 242.

1256 Barton papers, APS. "MM" on sheet refers to Materia Medica.

conversations. Barton facilitated delivery of glassware and other equipment for the laboratory in Northumberland and answered queries that the public had sent to Priestley. Barton aided in seeing Priestley's *The Doctrine of Phlogiston*[1257] through the press. Priestley had written directions 16 June 1796, and added a request for seeds for experimenting, then "Is your ingenious paper on the Indian Antiquities printed? When you write...send me any news you can collect. Ask Mr. Vaughan whether he has any letters, etc. for me from Europe." In that same letter he reported that he had found a copy of Pallas, *Comparative Lexicons*, delivered to Harrisburg, and that the innkeeper had promised to send them to Barton immediately.[1258] Barton was to keep them as long as it was useful.

On receiving Barton's *Memoir concerning the Rattle-snake*, Priestley commented he had "before thought that what was called fascination was the terror of the animal said to be fascinated, but you have set me right, it was distraction away from the young," and he added "I wish you could trace other supposed instincts to their true source as well as this." The instincts of animals became of particular interest to Barton, and he planned a work on the subject.

Again on 27 November 1800 Priestley wrote from Northumberland:

> *I thank you for your Fragments and think them deserving of a more respectable title. They have afforded me much instruction. Were I to begin life again, I would apply to Natural History, and should rejoice to have such a guide, and an example as you have set. 'Trammelled' as you are in a profession, I am astonished that you have found time to do so much, and so well. The first Naturalist in Europe must owe you great obligations. If you do nothing more, you will have established a lasting reputation.*[1259]

There were more letters between them, but for examples, Priestley wrote to Barton on 12 July 1803:

> *I read everything of yours with admiration of the extent of your readings and the variety and importance of your original observations, notwithstanding your manifold avocations, and bad health. It is of consequence to the world that you take care of it, and I hope your projected tour will in some measure answer that purpose, as well as that of science, of which I am confident you will never lose sight, go where you will.*[1260]

On 23 July 1803:

> *I think* [Newton's Chronology] *discovers as much original genius as any of his works. It fell into my hands very early in life. I adapted its principles, and have introduced them into my Charts, and on all other occasions.*[1261]

That same year he issued "a new Edition, With Improvements" of his *A Description of a System of Biography; with all the names...and the Dates...* (Philadelphia, 1803).

Throughout all of Priestley's years in Pennsylvania there existed a camaraderie with Barton, who, Priestley said, "was more of a chemist, than I am a Naturalist," with Woodhouse, who kept him informed of chemical literature as it became known, and with

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1257 *Considerations on the Doctrine of Phlogiston and the Decomposition of Water* (Philadelphia, 1796–1797).

1258 Priestley papers; copy at APS; originally in Central Library, Selford, England.

1259 HSP.

1260 HSP.

1261 HSP, Barton correspondence, f. 59.

Mitchill of New York, who, like Woodhouse, had a clearer understanding of oxygen than its discoverer. Woodhouse spent the summer of 1789 in Northumberland staying in the Priestley home, thus escaping the yellow fever plaguing the city, and discussing Priestley's theories. In one letter Priestley prompted Barton to "give my respects to Dr. Woodhouse," adding that he had no doubt Woodhouse's views on phlogiston were "a mere fallacy."

On James Hutchinson's death of yellow fever during the summer epidemic of 1794, Dr. John Carson had been appointed to the chair of chemistry; but on 26 October he died before he could assume the post. Barton had been mentioned for the position, but when he learned that Joseph Priestley had been suggested by Rush, he realized that he was no equal of the man he so admired. He wrote to the Trustees of the University of Pennsylvania Medical School admitting that his ambition had led him to "aspire to a situation" in which he might be useful, and which would add much to his "happiness in life," a theme recurrent in his writings: a happiness in the pursuit of science. There had also to be another consideration: fees from the greater number of medical pupils, and greater prestige from chemistry, a science of growing importance to the field of medicine. His letter of 11 November 1794 reads:

> *Gentlemen,*
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> *Having been informed that, at your last meeting, I was mentioned, among other persons, as a candidate for the Chemical Chair, rendered vacant by the death of Dr. Carson, and being told that Dr. Joseph Priestley is one of the persons who have been nominated for this important place, I have to request, that my name may not interfere with that of Dr. Priestley, in the mind of a single member of your board. Had I conceived it, in any degree, probable that this most illustrious chemical philosopher of our time could have made it convenient to accept of the place of professor of his favourite science, in our University, I should, certainly have taken steps to prevent my name from being mentioned with his, on this occasion. But from the conversations which I had had, at different times, with Dr. Priestley, before his departure from Philadelphia, I had concluded that it was his fixed determination to reside at some distance from the city, that he might pursue, undisturbed a series of experiments, which he had contemplated before he left his native country. Under this impression, I confess that my ambition led me to aspire to a situation in which I flattered myself that I might be useful, and in which, I well knew, I could add by the steady pursuit of a science, the charms of which are great* [and add] *much* [to] *my happiness in life.*
>
> *Permit me, Gentlemen, to return to you my grateful thanks for the honour you have conferred upon me, by nominating me, and be assured, that I am, with the most profound respect, Your very humble Servant, &c., Benjamin Smith Barton*
>
> *exact copy.*[1262]

On the very same day on which Barton wrote this letter, the Trustees elected Priestley, who at first considered accepting the position and employing Thomas Henry, Jr., as his assistant. Young Henry had been an assistant to his father, who had taught chemistry back in Manchester. However Priestley's enthusiasm for being a part in the founding of a new college in Northumberland, and his lack of appreciation of the comforts and social activities of Philadelphia—"it is expensive and disagreeable in the extreme...and more would be expected of me than I could have performed"[1263]—led him to decline.

1262 Barton papers, APS. His copy.

1263 Schofield, *Priestley*, 289; Gibbs, *Priestley*, 228.

Of Barton's candidacy, Charles Everett, a grateful pupil who had won his medical degree under Barton that year, wrote on 27 June 1795 to John Willis, who had won his degree four years earlier. He commented on the schism of dissension "which still so unhappily exists among the Professors," and of Barton he wrote:

> *I can say the reputation of Dr. Barton as a Lecturer with all those who have had the pleasure to attend him stands too high for me to add anything... I affirm none spoke either of him or his course but in terms of the highest satisfaction...it appeared to be the wish & the general sentiment of most of the medical students in speaking of the different candidates that if Dr. Priestley would not accept the chemical chair that Dr. Barton might get it...all the grand points of Chemistry connected with or important to the study of medicine were ably & satisfactorily treated by the Doctor.*[1264]

Among the divided faculty members there existed a contest to see favorites appointed. Dr. Wistar advanced his gifted and capable pupil Adam Seybert (M.D. 1793),[1265] whose thesis had considered the nature of the putrefaction of the blood of living animals. John Redman Coxe (1773–1864, M.D. 1794), grandson of Dr. John Redman and a favorite pupil of Rush, wrote from Edinburgh on 26 February 1795 his feelings regarding the contest. He agreed that, if Priestley were to accept, it would add very much to the reputation of the university, but:

> *Why does not Dr. Woodhouse try for it? I know none better qualified for it than him. With respect to Barton, he will be just as inattentive as he has constantly been with his Botanical Class, and I hope he will not obtain it–least the University should suffer for it.*[1266]

On 18 July 1795 Rush announced triumphantly to Coxe:

> *I have great pleasure in informing you that Dr. Woodhouse is elected Professor of Chemistry in our University. The votes were 10 in his favor & 6 for Barton & one for Dr. Ross. The appointment gives great pleasure to all the students of medicine. It to me is a cordial. His conduct as my pupil, and above all, his kindness, humanity & sympathy, & services to me during the gloomy autumn of 1793 had endeared him to me in a high degree...Barton is sorely mortified. He was so sure of the appointment that he sat at the feet of the stairs of the university while the election was held, ready to receive notice of it. Poor fellow! He is much to be pitied. His talents, directed by principle and industry would have made him respectable.*[1267]

Coxe had been informed by Rush of Barton's unfortunate dealings in Edinburgh and scorned him thereafter. He replied with enthusiasm from London 22 October 1795:

> *Your letter acquainting me with Dr. Woodhouse's victory (or rather triumph) over B——n, and his associates, I scarcely think needs my assurance of the pleasure it afforded. Be so obliging as to present my sincere congratulations, and best wishes for him in all his undertakings. I*

1264 Either Everett from Lancaster Court House, Virginia, or Wills forwarded the letter, or a copy to Barton, and it survives among Barton's papers, APS.

1265 Courtney R. Hall in *DAB*.

1266 Rush papers, 27: 29, HSP. Carson, *History*, 157–159, sketches Coxe's life.

1267 Rush Letterbook 1793–1813, Dreer collection, HSP.

suspect his appointment will prove a disappointment to Drs. Seyberg & Bache who were both ambitious of the honor. It could not however be in better hands.[1268]

James Woodhouse (1770-1809, M.D. 1792 under Rush) had taken both his undergraduate and medical degrees at the University.[1269] His thesis had considered the medical and chemical properties of the persimmon as compared with other potential plant products. His first position was as a medical assistant in the army, and he had succeeded Dr. Shippen. An independent thinker and experimenter, who improved gravimetric methods in chemistry, he had challenged Priestley's views on phlogisten, but Priestley had commended his early researches. Woodhouse's small laboratory in Anatomical Hall on Eighth Street opposite the State House yard where he worked "with an enthusiasm and persistence" was described by Charles Caldwell:

> *The weather was almost unprecedently hot; and his laboratory was in sundry places perpetually glowing with blazing charcoal, and red-hot furnaces, crucibles, and gun-barrels, and often bathed in every portion of it with the steam of boiling water. Rarely, during the day, was the temperature of its atmosphere lower than 110 degrees to 115 degrees of Fahrenheit—at times, perhaps, even higher.*
>
> *Almost daily did I visit the professor in that salamander's home, and uniformly found him in the same condition—stripped to his shirt and summer pantaloons, his collar unbuttoned, his sleeves rolled up above his elbows, and sweat streaming copiously down his face and person, and his whole vesture drippingly wet with the same fluid. He himself, moreover, being always engaged in either actually performing or in closely watching and superintending his processes, was stationed for the most part in or near to one of the hottest spots in his laboratory.*[1270]

William P. C. Barton, twenty-three when Woodhouse died in 1809, remembered his chemistry professor, "a portly man, apparently in the prime of life and the zenith of good cheer...his carriage bold, frank and courteous, his manners abrupt and excentric," his speech "clear, concise, and lucid."[1271]

When in 1802 Benjamin Silliman attended the University, he found Dr. Woodhouse's chemistry class, though "improperly done" and lasting about forty minutes, with no proper assistant, with "humble" apparatus, "a treasure." "He was always dressed with care; generally he wore a blue broad-cloth coat with metal buttons; his hair was powdered, and his appearance gentlemanly." Silliman dined with him in "his snug little bachelor's establishment." Woodhouse "supplied the first stepping stones by which I was enabled at no distant day to mount higher."[1272] Over the years, however, his "open and rude" remarks as an "infidel" "offended or shocked" Rush and the like-minded about the University. It is interesting to contemplate Woodhouse's influence on Barton's equivocal views during the years of his greatest success among the medical pupils and Rush's gathering concern over what he called "the abuse of Christianity."[1273]

Since Woodhouse and Barton shared the same medical school and meetings of the American Philosophical Society, to which Woodhouse had been elected 15 January 1796.

[1268] Rush papers, 27: 35. HSP.
[1269] Carson, *History*, 107; Edgar F. Smith in *DAB*.
[1270] Caldwell, *Autobiography*, 175.
[1271] Pepper, "Barton," 402.
[1272] Fisher, *Silliman* 1: 100-103.
[1273] Corner, *Rush*, 316.

they had little need to put to paper, and so there is little record of their daily association except for one remaining note among Barton's papers requesting him to return the book of minutes of the "Medical Professors by the Bearers." Although Woodhouse sent his articles for publication to Coxe's *Philadelphia Medical Museum* rather than to Barton's *Journal* and did not always support Barton in university matters, he was usually on the same side with Barton against Rush, Physick, and Coxe in disputes over medical practice. When Woodhouse died in 1809, Coxe was elected to the chair of Chemistry. William P. C. Barton has left us this recollection: "In 1818 [Coxe] resigned from that chair to take that of Materia Medica. He served in this capacity, until in 1835 the Medical School went through that riotous time, so aptly termed by some wit its 'attack of Coxalgia' which resulted in the forced retirement of Professor Coxe."[1274] Coxe died in 1864 at the age of ninety-one.

What may have been the views of Philip Syng Physick (1768–1837) on the election of Woodhouse and of his university years can only be surmised, since his diaries and other papers were destroyed in 1932.[1275] A native of Philadelphia, two years younger than Barton, he had been a pupil at Friends' Academy and took his bachelor degree at the University of Pennsylvania, then studied under Kuhn. His father, determined that Philip should follow him in the medical profession, accompanied his son to London. There, after some panic when viewing an amputation, Philip worked closely with John Hunter, who strongly influenced his tastes and techniques. Following his residence at Edinburgh (M.D. 1792), he returned to Philadelphia, but the very next year fell victim to yellow fever, from which fortunately he survived, as he also survived the vitriolic controversy over the etiology of the disease, siding with Rush, whose convert he was. It is only in these disputatious clashes that we ever meet him in relation to Barton. Certainly Physick aligned with few if any of Barton's affections, those which, for example, Caspar Wistar so often shared: comparative anatomy, fossils, and Indian lore. With some of Hunter's zeal for human anatomy, Physick became in 1805 the first physician to hold a separate professorship of surgery at the University. The "John Hunter of America" was his title among the pupils.

"His eyes steady, thoughtful, but not sad,...his language...soothing and full of wisdom, brief and pithy," was the way Barton's nephew remembered him. "He had mixed much in the world...but he was still a recluse...not sufficiently on his guard against the turpitude of others."[1276] He was elected to the American Philosophical Society 16 July 1802.

Death of Priestley

"This morning about 11 o'clock," read the announcement to Barton from Thomas Cooper in Northumberland 6 February 1804, "[came] the death of an eminent man who highly respected your person and Character."[1277] Joseph Priestley was interred in Trinity Church Burying Ground, although there had been some question as to whether he would be permitted to lie in any cemetery. On 24 February Barton was chosen to deliver the eulogy and labored conscientiously, wanting to give an appreciative and fair-minded assessment without stirring up the adverse feelings of those who would be in the audience who, like Rush and many others, considered Priestley "godless," an "atheist," and profane. Although Barton shared many of the same liberal attitudes, he may have been cautious lest he be classed the same way. After struggling some time he consulted his brother William, who wrote, 8 October, suggesting caution:

1274 Pepper, "Barton," 47.

1275 See W. J. Bell in *Isis* 53 (1962): 14. Norris, *Early Hist. Med.*, 228–232; Kobler, *Hunter*, 193–200; Carson, *History*, 149–153.

1276 W. P. C. Barton, quoted by Pepper, "Barton," 400.

1277 Barton papers, APS.

...I do not feel a sufficient reliance on my own abilities, to attempt to criticise any production of your pen. I feel, indeed, very anxious, that on this occasion you should say nothing which might distract from the reputation you have acquired on others. The subject, you cannot but know, is a delicate one—Dr. Priestley was, I believe, a good man; and the world have generally admitted him to have been eminent, as a philosopher. He had, nevertheless, I think, great foibles in his character—Both his religious and his political opinions—and even his political conduct, in some particulars—were undoubtedly very exceptionable. The incontroverted points of his character furnish, however, an ample scope for Eulogy; without touching upon those, which made many unfriendly to him. My earnest wish is, that you would abstain as much as possible from the exceptionable parts of his character, and sure I am, that, in so doing you will do great credit to yourself, as well as justice to his memory. I have taken the liberty of suggesting two or three slight alterations; and, in one or two instances, have frankly given my own sentiments, where they seem to differ from yours. Your Oration is not designed for the present day only—It must be your wish, as a lover of truth and true science, that it bear the test of future opinions and the most dispassionate enquiry. You cannot, I am sure, condescend to flatter the prejudices, or bend to the fallacious tenets, religious or political, of our modern theorists—They will not stand—take my word for it—The event will prove my prediction true.

Would it not be advisable to use the third person instead of the pronoun I—throughout? Would it not, also, be well to omit, as far as possible, all minute details of matters of fact, in the text—in order to give the greater room for oratorial language; and to throw such details, as can be conveniently done, into the Notes or Appendix? These are meant as a friendly suggestion; of which, however, you can form the best judgment.[1278]

The eulogy was announced by John Vaughan on 29 December, and Barton delivered it 3 January. He had invited William Bartram to attend the ceremony, but William replied from Kingsess:

January 2, 1805

My Worthy friend

I have just now received your note of attendance, at Philosophical Hall, in procession to the Church where an Eulogium to the memory of Doctr Priestley is to be delivered. I beg leave to inform You that I am sorry that I cannot attend owing to ill state of health. I thank you and the society for this mark of Friendship & attention.[1279]

Benjamin Latrobe reported to Jefferson 5 January:

Dr. Barton pronounced a few days ago, the long expected eulogium on Dr. Priestley. The church in which this was done was crouded with Ladies as well as Gentlemen, and persons of all descriptions, who forgetting the fund of biographical information they were receiving, seem to remember nothing, but that they were kept 2½ hours of the coldest day we have yet experienced this winter, in the coldest place in the city. The oration is chiefly valuable as a summary of Dr. Priestley's philosophical

1278 Barton papers, APS.
1279 Barton papers, APS.

> *labors; in point of warmth and eloquence it has the same merits, and the same faults with the Doctor's other writings, all of which are rather verbose and defficient in force.*[1280]

Barton himself had not been satisfied with the eulogy, and had felt, no doubt, some of the audience dissatisfaction, for when a copy was requested for publication in the American Philosophical Society's *Transactions* he withheld it "to perfect it further." The manuscript remained in his possession, perhaps because he found it too difficult to satisfy himself of a true estimate of the controversial liberal theologian whom he so admired. Rush, who did not attend the presentation, complained that innuendoes against him had been included.[1281] Although in his last illness Barton referred to the manuscript when planning the disposition of his writings, it has not been found. On 9 November 1815, realizing that his life was ebbing, he wrote:

> *I particularly and urgently request that my two extensive manuscripts on the life and writings of Dr. Priestley...be not presented to the American Philosophical Society or any account given to the public. Let these manuscripts be preserved amongst those by my family or friends, and to which something general has been said on the subject of my Manuscripts formerly.*[1282]

An obituary for Priestley appeared in *Monthly Anthology* by "one who loved and revered him when living, and will ever honour his Memory," J. Aiken of Newington, Stoke. "No person," he wrote, "engaged in his enquiries with a more pure and simple love of truth, detached from all private and selfish consideration of fame and advantage...Pure religion was [his] great end."[1283] Nine years after Priestley's death Barton reflected that "Priestley had unfortunately chosen the wilderness," the wilderness of isolation in a pioneer colony away from Philadelphia—or from England—or the wilderness of religion? Priestley had been the author of a four volume Church History, which included notes to all the books of scripture; had compared Mosaic and Hindu institutions, commenting on the excellence of the Mosaic; and had compared the teachings of Socrates and Jesus. Barton perhaps inferred that Priestley had wandered too far from the science to which he had made important contributions.

1280 Jefferson papers, LC.

1281 Rush-Barton correspondence, PHS.

1282 Barton papers, APS.

1283 J. Aiken, *Monthly Anthology and Boston Review* 1 (1804): 472-476, 521-523, 569-605.

Chapter XI

British Correspondents

Pennant and Others

A suggestion that had been made at a meeting of the American Philosophical Society in 1786 proved a boon to Barton. It was "to forward large sales" of the *Transactions*, "donations, any number not exceeding 20 copies be sent to societies and particular persons in Europe."[1284] This opportunity enabled a financially straitened Barton to introduce himself, his plans, and publications, and sometimes to establish correspondence with leading naturalists in Europe as well as in the rest of the Republic. Barton eagerly supported the election of Thomas Pennant, whose *Arctic Zoology* had inspired him, and suggested to Pennant that he contribute zoological notes on American animals. Barton was working at the time on his "Flora," and he had his duties as a medical practitioner and his natural history classes to teach.

Pennant, retrospectively reviewing his labors in his autobiography *Literary Life*, reflected:

> *My labors relative to the vast* [North American] *continent were there favorably received.* [Referring to his election to the Society in 1791.] *...but this honor I esteem as a reward above my merits. There, science of every kind begins to flourish; among others that of natural history, in which branch I may predict that my correspondent and friend doctor Benjamin Smith Barton will soon rise into celebrity, and to his pen I trust the many errors, respecting the zoology of his native country, will be corrected with tenderness and candor.*

Regarded as the greatest British zoologist between John Ray and Erasmus Darwin,[1285] Pennant (1726–1798),[1286] born into landed gentry at Downing in northern Wales, always had the wherewithal to follow his own inclinations. He traveled widely through Great Britain, Ireland, and on the Continent, usually paying the expenses of a companion. Rev. John Lightfoot accompanied him to Scotland, and Pennant financed his *Flora Scotia* (London, 1777). One longtime fellow traveler was Moses Griffith, who embellished Pennant's publications with more than 800 illustrations. A copy of Willughby's *Ornithology*, presented to Pennant when he was twelve, had stimulated his interest in natural science. Although he attended Oxford he did not graduate, leaving instead for a tour of Cornwall, where his interest in minerals and fossils was excited, and which stimulated many another jaunt. In 1755 he began a correspondence with Linnaeus, who proposed him for election to the Royal Society of Uppsala in 1757, the honor he treasured most among the many he received. Particularly inspiring during his tour of the Continent in 1765 were his meetings with Count de Buffon of Paris, and with the Dutch botanist, Peter Pallas of Russia.

Before setting out for Newfoundland in 1766, Joseph Banks visited with Pennant in London, and in May of 1767 Pennant visited Banks at his Lincolnshire home. Banks then

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1284 APS, "Minutes," 143.

1285 "It is difficult to say anything new about Pennant, particularly when it is generally agreed that he was the greatest British Zoologist after Ray and before Darwin." Tom Lloyd-Roberts, *Antiquarian Book Monthly Rev.* 2 (3) (1975): 3-6; Urness, *Pallas*, 169–115, bibliography 177–178.

1286 *Literary Life*, portr.; *DNB*, and see fn. 7, below.

spent eleven days at Downing that November, lending Pennant his diary of the Newfoundland trip, with specimens and the drawings made by Sydney Parkinson. Many of these Pennant had copied by his own artist, Peter Paillou. Pennant soon after was elected to the Royal Society. A strong bond of common interest lasted until 1783 when friendship was strained perhaps because of Pennant's practice of using freely in his own publications any pertinent material of others. Pennant attempted to use for his *Arctic Zoology* (London, 1784–1785, 2 vols.) illustrations that Banks had commissioned. He also gave slight acknowledgement of his use of Banks's notes from his Iceland and Newfoundland travels. In 1771 Oxford conferred a degree of Doctor of Laws on Pennant, his *British Zoology*, Second Edition (London, 1768-70), edited by Benjamin White,[1287] and *Tour of Scotland, 1769* (Chester, 1771) being signal successes.[1288] He continued to travel, write, and publish, two volumes of his twenty-two volume imaginary tour, *Outlines of the Globe* (London, 1798–1800) appearing the year of his death in 1798.[1289] In 1776 his portrait was painted by Gainsborough.

Interested in producing a work on the animals of his Majesty's dominions in America, Pennant sought contributions from Dr. Adam Kuhn to whom he wrote, introduced by a letter from Professor Cullen, on 24 September 1769.[1290] Kuhn had been elected Professor of Materia Medica at the College of Philadelphia on his return from medical studies abroad the previous year. Kuhn, however, had little inclination toward the study of animal life, and so he did not respond. Pennant proceeded with his work with what American material he could muster.

Arctic Zoology was so named because, after the separation of the American colonies from the British Empire, Pennant could not bear to give his work the name he had originally planned, "Zoology of British North America."[1291] Its three-volume first edition consisted of mammals (1784), birds (1785), and reptiles and fishes (1787). Although he claimed 406 American records, after deleting 78 duplicate entries, 6 mixtures, 22 unidentified, and 36 non-American, there were 264 records. Banks had lent him specimens and notes from Newfoundland, and he had the use of a large folio of observations of the Hudson's Bay country by Thomas Hutchins. Specimens had been sent to him from New York, New Jersey, and Connecticut by Ashton Blackburn.[1292] Alexander Garden of Charleston, South Carolina, had sent birds; John Ellis had sent information on Virginia deer[1293]; John Bartram's information on fishes had come by way of Peter Collinson; his information on the native black rat he had taken from Kalm; and notes on the passenger pigeon[1294] from John Bartram's *Observations on the Inhabitants, Climate...and other Matters worthy of Notice* (London, 1751). From John Bartram's *Journal*,[1295] he quoted the account of the old he-bear 7 feet long, and guessed to be 400 pounds; on bear oil, 15–16 gallons from one animal; on raccoons;[1296] on

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1287 Mr. Benjamin White, whose address was "Horace's Head" in Fleet Street, London, was a brother of Gilbert White of *The Natural History and Antiquities of Selborne* (London, 1789). Edward A. Martin in his *Bibliography of Gilbert White*, rev. ed. (London, 1934), 3, suggests with good reason that it was Benjamin White who brought his brother into correspondence with Pennant, the recipient of the classic letters of Gilbert White. *British Zoology*, ed. 2 (London, 1768–1770, 4 vols.).

1288 [The First Edition of *British Zoology* was in fact a spectacular failure, but the Second Edition, edited by Benjamin White, was quite successful and redeemed the project.]

1289 Lloyd-Roberts, "Pennant," 3–[6]; Lysaght, *Banks*, 94–95; and *J. Soc. Nat. Hist.* 5 (1970): 330.

1290 Jane Loring Gray, *Autographs*, 4: 77, HUH.

1291 Retitled when "I could no longer support my claim of entitling myself its (North American) humble Zoologist; yet unwilling to fling away all my labours, do now deliver them to the public under the title of the *Arctic Zoology*." Memoir of Pennant in William Jardine, *Naturalists' Library* 7: 63–64.

1292 W. L. McAtee, *Nature Mag.* 45 (Feb. 1952): 98, portr. 108. Blackburnian warbler was named by Latham in 1783. Ashton Blackburn's sister of Warrington, near Oxford, assembled a museum.

1293 [*Odocoileus virginianus* Zimmerman, 1780, White-tailed Deer. MSW.]

1294 [*Ectopistes migratoria* L., now extinct. AUD.]

1295 In William Stork, *An Account of East-Florida, with a Journal kept by John Bartram...*, ed. 2 (London, 1766).

1296 [*Procyon lotor* L., 1758. MSW.]

opossums; and on Cochineal cacti.[1297] He also quoted John Lawson.[1298] Pennant, alas, gave bird names only in English, and so Gmelin and Latham made his descriptions the basis of subsequent binomial names, Gmelin in the *Caroli a Linne Systema Naturae*, ed. 13 (Leipzig, 1788–1793), and John Latham in his *Index Ornithologicus, sive Systemae Ornithologiae...* (1790).

Pennant had unknowingly prodded Barton when he wrote in the Preface (he called it "Advertisement") to his *Supplement to the Arctic Zoology* (London, 1787):

> *Let the American philosopher do what is in his power; let him search the ill-explored seas, lakes, rivers, and forests of his country; and his labors will be amply repayed. The tract between the Allegany or Appalachian chain and the ocean, will for the present be ample field for the most advanturous naturalist. Let me entreat him to be expeditious, that I may have some chance of receiving the pleasure of knowing that I could animate any one of these laudable pursuits. But my electrical fire is too weak to be felt at such a distance: I want the potent emanations of a Linnaeus, which dart from pole to pole.*

Barton had probably discovered *Arctic Zoology* while in Britain, but had not the opportunity to meet its author. He admired the work, was inspired by it, and influenced by the copious footnotes that adorned almost every page. With the publication of his *Proposals* of his own plans for "an Historical and Philosophical Inquiry into the Original, Nature and Design of various Remains of Antiquity which have been discovered in America," he enclosed a copy while introducing himself to Pennant. Twenty-four letters passing between them have survived, and several others are referred to. At this time Barton was content to let Pennant include his contributions on quadrupeds and birds "not obtruding upon the world a separate Zoology of the more northern parts of America." He would be proud "to communicate" materials he had collected. He hopes to "accomplish" a favorite project, a "Flora of the United States." His letter reads:

> *Philadelphia, August 30th 1790*
>
> *Sir*
>
> *Although I have not had the honour and the happiness of being personally acquainted with you, yet your name and the merits of your several publications relative to natural history &c are not unknown to me. During my residence in England there were few circumstances from which I had promised myself more satisfaction than from a personal introduction to the author of the British and of the Arctic Zoology. Of this satisfaction, however, I was deprived; and from any situation, at present, in a remote portion of the world, where I am tied down to the duties of the medical profession, I much fear, I shall be, forever, deprived. As this is the case, I flatter myself, you will pardon the liberty I am taking in addressing this letter to you.*
>
> *The publication of the Arctic Zoology was a circumstance which could not fail of proving interesting to the lover of Natural Sciences in every country. At a very early period of my life, I had meditated a work somewhat similar, in its nature; but your labours, Sir, have precluded the necessity of anything of this kind, at least in so far as respects the history of*

1297 Pennant mentions the animals in *Arctic Zoology*, in order, 2: 271; 1: 29; 1: 82; 1: 129; 2: 323; 1: 157–160; 1: 174; and Suppl. 157.

1298 John Lawson, *A New Voyage to Carolina* (London, 1709).

Quadrupeds, and Birds. Every good American, and every lover of Natural Science, be his country on the eastern, or on the western, side of the Atlantic, will, on this subject, feel as I do; instead of obtruding upon the world a separate Zoology of the more northern parts of America, he will only labour to render your work more complete. I can have little doubt, you will pardon this manner of speaking;—you, Sir, who have witnessed the prodigious progress of natural Science, within the last twenty or thirty years; and who cannot be ignorant what immense portions of the vast continent of America yet remain to be explored. We Americans are, as yet, but infants in Natural History. We have given birth to an astronomer, and an Electrician, but providence has not, hitherto, given us a Linnaeus. In Britain, however, the case was nearly similar. Bacon & Ha[r]vey had preceded Willughby, and Ray. We will hope, then, that in time, we shall not be the only civilized people of the earth, among whom Natural History is not cultivated. We certainly, ought not to despair; fore with the blessings of peace and harmony, we have introduced a taste for this, as well as other Sciences.—

If you have any intention of publishing a new edition of, or an additional supplement to, the Arctic Zoology, I shall be proud to communicate to you a considerable number of materials, intimately connected with the objects of that work. Some of them, at least, I am inclined to think would be acceptable to you. In thus offering these materials to you, I hope, Sir, you will do me the justice to believe that I am not actuated by the most distant motive of vanity. I am anxious to see every addition made to an important work which, more especially, interests the lover of Natural Science in the New World. Should you think proper of this proposal I shall be proud to receive a few lines from you.

I have been, for some time past, engaged in preparing for the press a work, the title and nature of which you will discover from the enclosed paper. At some future day, I hope to accomplish one of my favorite objects, a Flora of the United States.

Should you honour me with a letter in answer to this, please to direct it to me in Philadelphia. The packet from Falmouth, offers a safe, monthly conveyance. I am, with the most profound respects for your character Sir, your very humble Servant &c Benjamin Smith Barton[1299]

Pennant replied from Downing in Devonshire, 17 October 1790, "I have all my life sought for a literary friend in N. America: and hence as it is I eagerly embrace yr kind offer of services: & do most freely offer mine. As an earnest, be so good as to honor my name for 12 copies of yr antiquities & when they are published." After assuring Barton that he will pay promptly for twelve copies of the paper on antiquities, he invited him to assist in a new edition of *Arctic Zoology*, now in press:

Let me request you to be expeditious in yr favors; and they may arrive time enough to be of use: & give me an opportunity of acknowledging the service done by yr liberality. How can I convey a copy to your university: & a copy of my London & of my Indian Zoology to yourself. I admire yr frank & candid manner. You speak like a Philosopher who knows the value of time. My moments ought to be precious. I am in my 65th year: but

[1299] All of these Pennant letters are in HSP; copies in Barton Papers, APS. We have included Barton's addressing only when it is particularly interesting as a mode of international communication before the days of regular postal service.

thanks to Heaven in full health of mind & body. The last Spring I took leave of the public as a publisher: But do not abjure the correction & Improvement of new editions: & at this time four of my capital works are demanded. I shall give some delay in my arctic zoology (part of which is already printed) that I may receive your additions. I hope you will undertake the fish: It is scarcely possible for any but a person on the spot to do this class justice. Yet I wish from you a catalogue of them. It may serve to announce that such a design is in hand. Pray produce Flora Americana & may the goddess bind yr brow with her choicest wreath! Could you favor me with the shells of yr brush, rivers or land. They are valid desiderata. I wish to usher a rising genius of the new world to the literati of the old. Write soon & write much. Be free in yr commands. Send what you can Yr new but true friend, Tho. Pennant.

Barton's next letter suggests the delays that would plague his beloved natural history activities. His ill health, the pressures of his "medical duties," college lectures, his participation in the American Philosophical Society, all were to obtrude for the next twenty-five years. He was putting in some time as co-curator of collections for the Society, and had acted on the Committee for Arrangements for the funeral of Franklin, and had read his paper on *Crotalus* [Rattlesnake]. He was appointed to the committee to consult a printer and to put to press volume three of the Society's *Transactions*. On 16 September 1791 his committee was to prepare an Appendix to volume four, "An Historical View of such papers as they may deem valuable," but which were not "thought expedient to publish at large." On 7 October he reported that the appendix was "not quite ready." In spite of all this Pennant stimulated him to dabble in yet other fields, as a collector of shells, and for the future a work on fish. He has proposed Pennant for membership in the American Philosophical Society. There Pennant will join some other important Britishers: Fothergill, elected in 1770, Banks, Lettsom, and Robert Barclay in 1787, Cullen in 1788, and Erasmus Darwin with Pennant in 1791. Was the drawing of "Sitta" [Nuthatch] Barton's own, or one of William Bartram's?

Philadelphia, February 24th 1791

Sir,

I have received your letter dated Downing October 17th 1790. I should have acknowledged the honour you have done me, much sooner, had not the state of my health and the nature of my medical duties prevented me. It is not too late to return you my most sincere thanks for the polite and friendly terms in which you address me.

"I was happy to learn from you, that a new edition of your Arctic Zoology is in the press. In consequence of this piece of intelligence I have redoubled my effort to get in readiness those materials whither I ventured to promise you, and had it not been for the uncommon degree of sickness in this city (and I was so unfortunate as to share a portion of it myself) I should have been enabled to have transmitted them to you before this late period. I assure you, however, that they are in great forwardness and that they shall be sent to you in about four weeks from the date of this letter. You mention that you intend giving some delay to the work that you may receive my additions. This is a compliment which greatly flatters me. I shall only beg leave to remark on the subject that altogether the papers which I am arranging are chiefly miscellaneous yet that they all have an intimate relation to your work. I have avoided, as much as possible, the mention of any fact, or circumstance connected with the history of animals described in your Arctic Zoology which I find taken notice of in other writings. On the subject of your first volume I flatter myself, I shall be able to give you some information of curiosity and importance entirely new. I shall transmit

to you some drawings, among others one of a species of Sitta [Nuthatch] *which is perhaps new. On the subject of fishes I shall say little because I shall devote my leisure hours next summer to the obtaining of such a knowledge of these animals as will enable me to give you at least a pretty full catalogue of them. The papers I shall send you, in four weeks, will be bulking six or eight quires, but I do not expect that every thing in them will be valuable.*

I rejoice to learn that you are blessed with a son who follows the footsteps of his father. I should be happy to be made known to him. If I can render him any services, I shall be proud to serve him. He is older than myself but the difference in our ages is not very considerable. At some future day—I most sincerely hope the day is distant—when the task of revising your work is committed to Your son, perhaps my situation in this Ultima Thule of Science may enable me to show my regards to him who bears the name of the author of the Arctic Zoology.

You ask how you may convey a copy of your London ed of your Indian Zoology. I cannot remain silent on this head. If you will please to have them sent to the care of Mr. Samuel Jennings, Printer, at the corner of Coventry Street, Haymarket. They will reach me. I shall greatly prize the present. The Indian Zoology I have never seen but I have frequently heard it mentioned.

I have taken the liberty to propose you as a member of the American Philosophical Society held in this city. A nomination for new members will be held in the course of a few months when your name will be enrolled among the list of some of the most distinguished British literati who are members of this institution. A third volume of the transactions of the Society is ready for the press. The two first volumes I shall send to you by the first private opportunity which shall offer to Liverpool.

I shall not forget my duties to Flora Americana. I hope to proceed with the work on the plants of the United States which I mentioned to you. The Prospectus will be ready in the course of next summer.

I cannot conclude without returning my most sincere thanks for the honour you have done me in permitting your name to appear as a subscriber to my work on American Antiquities, &c &c I am peculiarly flattered by your wish to have the American edition.

Assuring you that I shall not forget my promise of sending the Papers in a few weeks; and wishing you to consider me as one of your warmest enthusiasts in pursuit of natural Knowledge, I remain, Dear Sir, (Pardon my Freedom) Your very humble servant & sincere friend, Benjamin Smith Barton

P.S. I believe any thing which you may please to direct to me will come more safe through the hands of Messrs Elliot & Kay, Booksellers, No. 332 Somerset Place, Strand. I shall augment my collection of shells & shall not hesitate to transmit to you a considerable number of them early in the course of next summer.

BSB.

There will still be delays, and promises to send material if it will not be too late, Barton writes. The third volume of the *Transactions* is finally in press, and Barton will send copies using his membership privilege, hoping for return items from Pennant.

Philadelphia January 9th 1792

Dear Sir,

Along with this letter you will receive your diploma of election to the American Philosophical Society. It affords me some degree of pleasure to inform that a very large meeting of the Society presided at your election, and that you were unanimously received as a brother member into the oldest and by far the most respectable literary institution of the kind in North America. In thus conducting themselves, I am confidant the Society have done nothing but what was due to your merits. I hope, however, that you will consider the diploma as a testimony of the Society's well meant attention to you.

You are probably not a little Surprised that after I voluntarily made you an offer of certain papers relative to the natural history of our country, those papers have never been forwarded to you. The circumstances I cannot but regret, not that the new edition of your Arctic Zoology will be the less valuable for the want of them, but because there is an appearance of inconsistency and instability on my part in the business. The truth is, a multiplicity of engagements, a considerable increase of professional business, and certain domestic circumstances prevented me from arranging the papers, so as to be of any service to you till very lately. They should have been sent to you immediately, but I was apprehensive that they would arrive much too late for you. They are now as complete as I shall be able to make them for a long time, and if you will inform me whether they can be of any service to you, I pledge my word they shall be transmitted to you by the first opportunity after the receipt of your letter.

The idea which you suggested to me of undertaking the history of our fish has had a serious impression on me. I shall most probably venture the task. Though I am confident I cannot complete my plan in less than three, four, or five, years. My historical work, the subscription for which you so liberally honoured with your name will be put to press on the first day of next month. At Present, my thoughts are much employed about it.

I shall be extremely glad to know of you whether the new edition of the Arctic Zoology has yet appeared. I also wish to know what progress you have made in the printing of your Indian Zoology. In return for this literary news I shall be happy to do what I can at present. I can inform you of nothing of importance that is printing or likely soon to be published. In this country except the third volume of the American Philosophical Transactions is in the press here. Do you possess the two first volumes? If you do not, I shall send them to you together with the 3rd volume when it shall be published.

I assure you I have not forgotten that I promised to make for you a collection of our shells. In this business I have made some progress. You shall receive them in the spring.

Should you write to me, please send your letter, directed to me, as formerly, by the British packet. It is much the safest conveyance. I beg leave to subscribe myself, Dear Sir, Your humble servant, &c, Benjamin Smith Barton

[Addressed:]... *Thomas Pennant Esq., Downing Flintshire To the care of Mr. Hughs, Printer, Turnstile, Holborn, London*

Writing again, now that he had received Pennant's letter of 3 November, Barton wrote in as positive a tone as he could, mentioning the honor given Pennant by the American Philosophical Society,[1300] and regretting his failure to send promised data. He included a few notes on birds, the purple finch, probably the cowbird [*Molothrus*], and the red crossbill, and sent his paper on the bite of *Crotalus*.

Philadelphia, February 27th, 1792

Dear Sir,

Several weeks ago I transmitted, along with a letter, your diploma from our Philosophical Society. I hope you received both, not for their being of any great intrinsic value but because they may serve in some measure to convince you, that I have not entirely forgotten that you honour me with your friendship, and that I have been forward in pronouncing the necessary eulogium before the Society, to demonstrate my regard for your great merit.

I have this day received your kind letter of the 3rd of November. You see, how long it is that your inhabitants of this Ultima Thule are frequently without knowing what has become of those whom we esteem and admire. I read, however, your letter with much pleasure; and was only sorry that the non-arrival of my papers had been a very disappointment to you. In my last letter I assigned reasons for the delay; I further observed that if they could then be of any service to you they should be sent.

We have had an uncommonly severe and long winter, But every misfortune, as the vulgar saying has it, is attended with some advantage— You will smile when I tell you that I should long regret the severity and length of the winter of 1791 and 1792 were it not that a number of curious birds have been driven from the north and that there had thus been afforded me an opportunity of examining them. The Fringilla flammea[1301] *has been brought to our market, and has been shot in the neighborhood of our city, in considerable numbers. The Emberiza nivalis*[1302] *has also been killed near the city.—The smaller variety of Loxia curvirostra*[1303] *has been found dead, with the cold, and several other birds have been observed here which are either rarely seen in the lower latitude, or which have never been seen at all. But these are trifling remarks.*

Along with this you will receive a little paper on the Bite of the Rattle-snake. It is extracted from the 3rd Volume of the Transactions of our Society, which is in the press, but which will not be published till late in the summer.

I shall be glad if this paper contains anything the perusal of which can give you any pleasure—I am sure it contains nothing new to you. My chief object in printing it was to extricate some vulgar and pernicious prejudices on the subject.

I am happy to hear that the new edition of your London has appeared—I have just seen the first edition & no more—our Public Library has received it—I long to see your Indian Zoology.

I can readily imagine the happiness you enjoyed in receiving your son, after an absence from you. I should be happy to be introduced to him,

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1300 APS, "Minutes," 196.

1301 [Common Redpoll, *Carduelis flammea* L., 1758. AOU.]

1302 [Snow Bunting, *Plectrophenax nivalis* L., 1758. AOU.]

1303 [Red Crossbill, *Loxia curvirostra* L., 1758. AOU.]

both for his character and for his being your son—I beg leave to subscribe myself, Dear Sir, Your greatly obliged friend, &c, Benjamin Smith Barton

[Envelope:] *Thomas Pennant Esq., Upper Grosvenor Street, London*
Honoured by Mr. Harvey

Pennant now could wait no longer. His mildness of tone barely concealed the annoyance he felt over the weeks of anticipating the rich material he had expected for his "Introduction" from what had seemed a most promising source. His phrase "only inconvenience" reproached a harried correspondent. He was still waiting for the promised volumes of the *Transactions*. From Downing, 26 March 1792 he wrote:

I freely release you from all past promises: the only inconveniences that resulted from them now the defering my publication of the new edition of the Arctic Zoology above a year. The press now is set to work again & I shall not forget to [send] *a copy, for I hope no one shall con*[ceivably] *have an opportunity of reproaching me with a breach of promise. A copy of the Indian Zoology is left for you (colored) at Mr. Whites' bookseller Fleetstreet for Mr. Elliot refuses to take anything* [for] *it from you...I shall be much obliged to you for the books you so kindly offer.*

"You will see that we Americans are yet infants in science," replied Barton 12 June, excusing his tardiness, "we move but slowly, compared to you more enlightened Britons." He was still intending to forward his supplementary notes for *Arctic Zoology* "very soon," but with various new commitments, they would not arrive in time. He mentions the visit to Philadelphia of Cherokee Indians whom he interviewed, and his perennial note-taking of tribal names for familiar *naturalia* again emphasizes his ethnographic interest. The finch called by the Cherokee "Onaclonerta"[1304] may have been an American finch.

Was it mere procrastination on Barton's part that he had not sent off the two promised volumes of the Society's *Transactions*? Or was he holding them for what he hoped would be the imminent publication of the third volume? Volume three was not to appear until the following year due to a lack of paper in the country for putting it into print. Then there was always the problem of finding a safe and suitable method of sending packages abroad, but now "a gentleman," Mr. Pleasants, is taking his letter along with the *Transactions* to London from where they will be forwarded to Pennant, and that same traveller will carry Pennant's *Indian Zoology* to Philadelphia as a gift for Barton.

Philadelphia June 12 1792

Dear Sir

I have this moment received your letter of the 26th of March. I shall not forget to attend to what you say concerning the Philosophical Society. I wish you had informed me whether you have received your diploma.—I send by this conveyance the two first volumes of the Society's Transactions, which I beg you will accept as a small mark of my esteem for your character and of my sense of your attention to me. A third volume is now in the press, and will be published before the close of the Summer. It will contain several papers of mine, one of which (on the bite of the Crotalus horridus) I transmitted to you about two months since. I shall think myself bound to send you the other volumes as they appear. You will see that we

1304 Sterling, *Barton's Notes*, in transcribing this letter used "Maclanesta" wrongly for "Onaclonerta."

Americans are yet infants in Science—we move but slowly, compared to you more enlightened Britons.

I exceedingly thank you for your attention in leaving a copy of the Indian Zoology for me, at Mr. White's. I have written to Mr. White & requested him to put it into the hands of the gentleman who takes this letter to Lond.—I shall place a very high value on the work, both for its intrinsick merits & as being a present from you.

Believe me, I am not a little distressed to think that my promising communications have given any delay to the publication of the Arctic Zoology. I shall, however, send them very soon. In a few days (I wish you, in making the promise, to believe that I am anxious to shew you that my failure in my engagements, formerly, was the consequence of circumstances, which I could not forsee) I shall send you some drawings & descriptions of a few new subjects of Natural History. I send you, by this conveyance, two small birds, male & female. I am, not confident that this species has yet been described. They appeared, in great numbers, in various parts of Pennsylvania, & c. last winter. The Cheerakee Indians who were in Philadelphia, about the time of their appearance called this bird Onaclonerta and informed me that it is common, in large flocks, in their country. It feeds upon various kinds of small seeds. Its range in our continent is certainly extensive, for it has been seen in higher latitudes than Philadelphia.—Please to inform me whether this bird is a new species. I had not your A. Zoology to examine, and I think Linnaeus has not decidedly described it, unless it is his Fringilla flammea.[1305] *If it is a new species I think the specific name altivolans would not be improper; for it flies very high.*

You may depend upon hearing from me, in a few weeks as I shall write tomorrow, or next day. Meanwhile, believe me, Dear Sir, your obliged & c., B S Barton

To Mr. Pennant [also on margin Pennant script.]

ans'd Aug. 18 1792

[Envelope] *Thomas Pennant, Esq. Recommended to the particular charge of Messrs. White & Son, Booksellers Fleet Street, London*

[on margin:] *with two books and a small box*

A letter from Pennant 14 June 1792 crossed Barton's. He was preparing to write the Introduction to the new edition of *Arctic Zoology*, which was still in press: "If you will communicate in brief terms anything on your rivers or zoology I shall thank you. I seek only the admirabilia & utilia either in the animal or vegetable kingdom: but remember I cannot spare much time, so pray be expeditious. Drawings of any curious fishes or plants will be acceptable." He also wants to know what information Barton has on Padouca, and other tribes of Madog sought "about the upper parts of the Missouri... I am rather in disgrace: not having the warmest hope of their discovery. Pray what is the opinion of yr philosophers." He also would like any county or provincial maps, or plans of rivers. He certainly would extend his introduction to include anything he might receive from Barton.

Madog or Madoc ap Owain Gwynedd (fl. 1170?), a Welsh Prince, was supposed to have sailed to American about 300 years before Columbus, and have settled an area that developed a Welsh-speaking Indian tribe. Various tales flourished, settling Madog in various parts of the country from Mobile Bay, Alabama, to the Mandan Indians' settlement on the upper Missouri River.[1306] Barton had related the legend in his *Observations*, having read it in Robertson's

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1305 [Common Redpoll, *Carduelis flammea* L., 1753. AOU.]

1306 Morison, *Discovery*, 84–87.

History of America, and there refuted it. Barton's "Onaclonerta," the American goldfinch, now known as *Carduelis tristis*, is the subject of the first paragraph of his letter of 25 June 1792. He suggested the generic name *Carduelis*, "Thistlebird," a word going back to Pliny according to Coues.[1307] *Carduelis* was taken up by John Cassin for the American bird. "Carduelis minima" of this letter evidently reappeared in Barton's *Fragments* (1799), 20, after he had seen the male as "Fringilla canabina?," an autumnal bird of passage that appears in Bartram's *Travels*, and which Barton thinks is related to, but is not the Greater redpoll of Linnaeus. It was identified by Francis Harper, *Bartram's Travels*, 512, as the Purple Finch, *Carpodacus purpureus* J. F. Gmelin. Barton had described the female.

Barton enclosed with this letter the nuthatch drawing promised earlier. If he had not drawn it himself, he had probably commissioned William Bartram after being provoked by the illustration in *Arctic Zoology*, 2:28, which was labeled "Canada nuthatch." That Pennant's illustration was not the red-breasted nuthatch, *Sitta canadensis*, but the white-breasted, *S. carolinensis* Latham, was reported by Coues.[1308] Furthermore, although Pennant "correctly distinguishes the two species" *S. carolinensis* and *S. pusilla*, he "inadvertently calls one the other." Whether the drawing Barton sent was *Sitta carolinensis* or an "accidental" of the southern brown-headed nuthatch, *S. pusilla* Latham, remains unsettled judging from his comments on seasonal appearance. Barton's report that *Sitta pusilla*, for which he cites Catesby's figure, "Sitta capite nigra," was a permanent resident of Pennsylvania does not fit in with our present nuthatch records. When he summarized his "observations" of birds in his *Fragments* he still failed to understand his nuthatches, claiming that the bird of the drawing and description sent to Pennant was a species distinct from *S. carolinensis*.

Barton's observations on birds went into his *Fragments*, his work on "Americans" appeared as *New Views* (1797; ed. 2, 1798). His comments on the introduced and not indigenous status of several European weeds is accepted by botanists today. His ambitions for his "Flora" were thwarted over the years. He managed an incomplete *Flora Virginica*, a revision of part of Gronovius' work of the same title. His letter "Recommended to the care of Mr. Benjamin White, Bookseller, Fleet Street, London," Pennant marked as answered 31 July. Barton's letter reads:

> *Philadelphia, June 25, 1792*
>
> *Dear Sir*
>
> *The Onaclonerta*[1309] *made its appearance in the neighborhood of Philadelphia about the 15th of December. I am convinced that it is a northern bird. Whether it is or is not the Fringilla flammea of Linnaeus, I think it may, with great propriety, be removed from that genus. I would call it by the generic name Carduelis, and think the Carduelis Americana of Catesby (the Fringilla tristis of Linnaeus)*[1310] *belongs to the same family. Their conformation, their colour, their actions, and their language (if you will indulge the expression) clearly evince their family-character, or consanguinity. I even think the Fringilla carduelis ought to be extracted from the family and associated with my Carduelis. To this genus belongs also, a small bird which is never seen except in the early spring. It is of an olive-green colour on the upper side, and of a pale ash-colour or dirty white beneath; the tips of the larger feathers of the wings are white. I call this little bird Carduelis minima. It is, properly speaking, one of our*

1307 Elliott Coues, *The Coues Checklist of North American Birds*, ed. 2 (Boston, 1882), 50.

1308 Elliott Coues, *A Checklist of North American Birds* 1 (Salem, Mass., 1879), 136–137.

1309 [Common Redpoll, *Carduelis flammea* L., 1759. AOU.]

1310 [American Goldfinch, *Carduelis tristis* L., 1758. AOU. European Goldfinch, *Carduelis carduelis*, originally *Fringilla carduelis* L., 1758. ANI. AOU.]

autumnal birds of passage, spends its winters in the Southern States, and returns through Pennsylvania about the 12th of March, on its way north.

I send to you, by this opportunity, a drawing of a beautiful species of Sitta. Is it Sitta canadensis? I am not positive. I do not think it necessary to describe it, as it is represented in the drawing, of its natural size & in its natural colours. It is a winter bird of passage, coming from the northward to winter in the more southern climates. It appears in Pennsylvania about the latter end of November, immediately preceding the severe cold of our latitude: it is never seen in the summer, or warm Seasons. In this circumstance it differs from the Sitta capite nigra of Catesby (Vol. 1. p. 22. t 22), which breeds in Pennsylvania, and continues with us the whole year. The Sitta of which I send a drawing, returns through Pennsylvania, from the Southward, about the 12th or middle of March. It feeds upon the worms, &c. which it procures from the Pine & other trees.—

I am labouring on my work on the Americans & also at my Flora of the United States. My encouragement for both these works from distinguished literary characters in Europe has been very considerable. The work on the Americans will certainly appear in the course of this year, if I live. I subscribe myself, with great sincereity, Dear Sir, Your obliged & humble servant, and friend, To Mr. Pennant, Benjamin Smith Barton

P.S. In the Introduction of your Arctic Zoology (p. cxxxiv) you mention Chrysanthemum Leucanthemum and Leontodon Taraxacum[1311] *as natives of the eastern parts of North America. I am convinced, that these two plants are not indigenous to our continent, but that they are foreigners naturalized here. The same remark applies to the Hypericum perforatum, Antirrhinum Linaria,*[1312] *Verbascum thapsus, Verbascum Blattaria, and many other plants, which, although they are now very common in different parts of North America, have undoubtedly, been introduced here from other countries. Still, however, I am persuaded that America possesses as natives, a very great number of plants of Europe, and of Asia.*

BSB

[Envelope:] *Recommended to the care of Mr. Benjamin White, Bookseller, Fleet Street, London. A copy.*[1313]

Barton's answer on 12 September to Pennant's letter of 14 June is by far the longest that survives. Obviously overcome by the enormity of the task he has undertaken, he would like to know Pennant's interests more definitely for "the field I tread is so immense that I know not what part to begin to cultivate first." Want of paper is still delaying volume three of the *Transactions*, wherein he has articles. About the Welsh Indians he cites his *Observations*, and discusses various hypotheses of origins. The Indians of Darien undoubtedly had adopted some words from the ill-fated Scottish settlers there in 1695–1791. James Adair (c. 1709 - c. 1783)[1314] came from Ireland arriving in Charleston, South Carolina, about 1735 and became an Indian trader. He is chiefly known as the author of *History of the American Indians, their customs, etc....* (London, 1775) in which he proposed that the Indians were descended from Jews. Lionel Wafer, a buccaneer surgeon who had been left behind after being wounded, had lived among the Indians for sometime after 1691 until rescued by Dampier. It had been due

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1311 [Also known as *Leucanthemum vulgare* Tourn. ex Lam., and *Taraxacum officinale* Weber ex F. H. Wiggins, the Dandelion, respectively. IPNI. ITIS.]

1312 [Referred to now as *Linaria vulgaris* Hill, Butter-and-Eggs or Flaxweed. ITIS.]

1313 Barton papers, APS.

1314 W. J. Ghent in *DAB*.

to his account, *A New Voyage and Description of the Isthmus of America* (London, 1702), that the unfortunate Scottish settlement had been established.

Barton lists nine maps, published and yet unpublished, appearing in the United States and London, concluding with his own of western Pennsylvania. Twice he tells Pennant that Howell's map is being engraved that year in London, and that his contribution to it, from his having taken part in the western boundary survey with his uncle David Rittenhouse, will be incorporated with Howell's map. The legend of the published map, however, contains no mention of their part in its composition.[1315] Thomas Hutchins (1730–1789) born in New Jersey, served in the British Army until 1780. He kept journals and made several maps. Barton probably refers to *A Topographical Description of Virginia, Pennsylvania, Maryland, and North Carolina* (London, 1778). Hutchins was elected to the American Philosophical Society in 1772. William Scull was surveyor for the Penns, his *Province of Pennsylvania* was sculpted by Henry Dawkins, and printed by James Nevil for the author in 1770 [Philadelphia?]. It contains many historic paths.[1316]

The most important map of the colonial period, the one that initiated professional American cartography, was compiled by Lewis Evans, *A General Map of Middle English Colonies in America* (Philadelphia, 1755). It was revised and reissued by Thomas Pownell in 1766. Pownell was a member of the Congress at Albany, New York, later governor of New Jersey and Massachusetts. Pownell generously gave to Evans's destitute family the income realized, since on his return to England, Evans died in prison for questioning British title to Fort Frontenac.[1317]

Barton surely refers to the map compiled in 1783 by William MacMurray (d. 1789) of Carlisle, Pennsylvania, who had served in the Continental army. He proudly identified himself as "late asst. Geographer to the United States." The map was reproduced in the *Pennsylvania Packet and Daily Advertiser* for 9 August 1783, 17 December 1784, and 18 April 1785.[1318] Dr. Hugh Williamson (1735–1819), native of Pennsylvania, a member of the first graduating class of the College of Philadelphia in 1757, studied medicine at Edinburgh and Utrecht (M.D.), practiced in Philadelphia, then the following year left for England from Boston where he had observed the "tea party." He testified at the request of the Privy Council on the imminence of civil war if Britain continued her repressive measures. During the Revolution he took refuge in Holland, then returned to practice medicine at Edenton, North Carolina. "Such was his integrity that none could reproach him with flattery or falsehood."[1319] About the time of Barton's letter, Dr. Williamson retired to New York, married at fifty-four, became a friend of DeWitt Clinton, and composed his *History of North Carolina* (Philadelphia, 1812, 2 vols.). He died at the age of eighty-four. From his paper in the *Transactions of the American Philosophical Society* in 1771 until his revision of it in 1811, Williamson advanced his conviction that deforestation alters climate. Barton also suggested Joshua Fry and Peter Jefferson, *A map of the most Inhabited part of Virginia, containing the whole Province of Maryland with Part of Pensilvania, New Jersey and North Carolina* (London, 1755).[1320] Fry was a teacher of mathematics at William and Mary, and a surveyor; Peter Jefferson, a surveyor, was the father of Thomas Jefferson. Pennant marked this long and newsy letter as answered 17 December 1792.

1315 F. B. Maggs, *Voyages and Travels* (London, 1951), vol. 3.

1316 William Scull, *To the Honorable Thomas Penn and Richard Penn, Esquires, true and absolute proprietaries and Governors of the Province of Pennsylvania...this map of the Province of Pennsylvania is humbly dedicated* (Philadelphia, 1770). Emerson D. Fite and A. Freeman, *A Book of Old Maps delinating American History...* (Cambridge, Mass., 1926), no. 57. The original map is in LC.

1317 Brown, *Mirror*, xxi.

1318 Silvio A. Bedini, *Thinkers and Tinkers, early American Men of Science* (New York, 1975), 258.

1319 Drake, *Dictionary*; J. G. deR. Hamilton in *DAB*.

1320 Egan Kemp, *American Maps* (New York & London, 1976), no. 37.

Philadelphia, September 12, 1792

Dear Sir

Your letter dated Downing June 14th, I did not receive till yesterday. I wish your letters could come with more speed: but although their dates are seldom recent, I read them with great pleasure. They give me a great desire to see you, &, I assure you, they give a new impulse to my love of the sciences which we both cultivate.

I hope you have received the two first volumes of our society's Transactions. They were sent to the care of Mr. B. White (Fleet Street) and along with them two specimens of a little bird, which I am not perfectly acquainted with. Since the date of my letter which accompanied the Transactions, I have sent to you two packets of papers; and with one of them some drawings. All these, I flatter myself you have received. The third vol. of the Transactions is still in the press. Near two hundred pages are printed off. The delay of its publication is principally owing to the want of paper, an article for which the call in this country is really astonishing. I fear the book will not appear before the beginning of next spring. When it does appear, I shall not forget to send it to you. This vol. will contain several papers by me. Their titles, however, I need not trouble you about at present. But as you express a desire to receive some drawings from me, I send you a proof impression of a very fine plant, an account of which will be published in the transactions. I have no objection to its appearing in your Introduction to the Arctic Zoology, if you think it entitled to so honourable a place. You will, then, have an opportunity of anticipating me in giving an account of it, for my account will not appear before the publication of the 3rd vol. of the Transactions. Had your letter arrived earlier, I should have made a drawing of the Sturgeon for you. It is now too late. If it will be of service to you next spring, I shall send you an accurate one.

I have heard a great deal about the Welsh Indians. I very early imbibed your opinion as delivered in your Arctic Zoology, and mentioned you, on the subject, in a little work which I published in England, at the age of nineteen. I dont know whether you have seen that work. I do not mean to hint that it is worthy of your attention. I, certainly, think there is some ground for the story; but I have no doubt, that the whole affair will turn out very different from a discovery of Madog's descendents in America. I have said that I think there is some ground for the story. I shall explain myself.—

You know that many of the first visitors of the new-world were struck with the resemblance which exists between some of the American nations & the Jews. Some Hebrew words were found in this continent as they have been every where else. The Americans were, by now, said to be the descendents of the Jews. and Adair laboured very hard to prove the matter, in a ponderous quarto, which few people read, because it is big with system & extravagences, though, indeed, it contains some curious & accurate matter. In like manner, in the languages of some of the American tribes, there are found some words which are a good deal analagous to words in the languages of the ancient Celts. Wafer, who was a very respectable observer, if we consider his occupation in life, mentions the coincidence which he found between the language of the Indians of Darien & that of the Highland Scots; and I will produce instances of their coincidence. Some Greek words are also found in certain of the American languages. I would not strain a point so much as some writers who have mentioned the coincidence which subsists between the Greek Theos & the Mexican Thotle. The word Potomack, which is the name of one of our great rivers,

is a good deal like Potomos. These words (perhaps, they are accidental resemblances) have given rise to some of the numerous theories which we have had concerning the peopling of this great continent, And, I doubt not, that James Morgan Jones, or person who understood the Welsh language, finding Celtic words (or a language spoken by the Welsh) among the Americans, in the fullness of his zeal, would bring his countrymen among the Podaucos, Apaches, &c. Such, I believe, has been the original of this wonderful theory,—I presume, that were an ignorant Highlander to visit Darien Indians or some other American tribes, he would fancy himself among his dear countrymen, whom painting, exposure to the sun, &c. he might suppose, had exalted or degraded to their present tinge. I lately conversed with an old Highlander who said, that the Indians spoke the Highland language. Some Highland words were mentioned by him but they were harsh for me to pronounce with ease: one word, which indeed is not hard, I recollect; the word Tiney, which in the Highland language he said, signified fine; now, our Delaware Indians call fine Tindey: the resemblance in sound is certainly not small. The Celts have, undoubtedly, been very widely spread over the globe; I believe, they existed in this country; and that their descendants are some of the present tribes. That Celtic words should be found among the Americans, when Celtic words are found almost everywhere else, is not, I think to be wondered at.—

I beg pardon for this kind of matter. Pray, what may be the merit of William's book on the subject?[1321] *I have seen some account of it in a review, if it has anything new, I should be glad to have a copy of it. Would you favour me with one?*

In answer to your question respecting our maps, I shall tell you that at this time a very large map of the State of Pennsylvania [Howell's] *is engraving in London. I imagine you have seen Hutchin's map, as it was published in England. Schull's map of Pennsylvania was published many years ago, as was Evan's of the middle colonies. Evan's was republished by Gov. Pownall in England* [1766]*; Schull's I shall procure for you. I send you Mr. Murray's map by this conveyance. Dr. H. Williamson is a member of Congress, a man of genius and learning, is preparing a map of the Western parts of North Carolina. Mr. Jefferson's you can procure in London. Many other maps have been published, but at present, I cannot recollect them. I shall make a complete collection of them for you if you wish such a collection. The map of the greater part of the Western boundary of Pennsylvania was drawn by myself. It will be incorporated with Howell's map of Pennsylvania, now in the hands of a London Engraver. Have you seen Evans's Analysis? It contains some good matter. I am sorry that I am not able to give you much information concerning our rivers.*

Many of the rivers west of the Alleghaney Mountains run for considerable distances, through savannas, or natural meadows. These meadows are rich in grapes (some of which are new) and other vegetables. Many of these Savannas are by no means the vile, obscene places Mr de Buffon would make them. They are beautifully painted with some of our finest flowers, such as Lobelia Cardinalis, Amaryllis atamosca [*Zephyranthes atamasco*], *Lilium superbum, &c. &c. &c. As far as my observation has extended, I think the greater part of the rivers beyond the*

1321 John Williams, *An Inquiry into the Truth of the Tradition, concerning the Discovery of* America (London, 1791). Copy in APS, and in LCP.

above-mentioned mountains are diminishing: I am confident this is the case with respect to some of them. I believe that some of our Lakes are also greatly diminishing in the quantity of their water.

The quantity of coal in the western parts of Pennsylvania, Virginia, &c. is so great, that I have seen a number of creeks, and other Waters, running for a considerable distance over a bed of coal: the banks of these western rivers are frequently lined with coal. When coal forms the bed of a river, I have seldom known it to be of any considerable thickness; and its surface is very eaven.

The Monaungahela, which joins the river Alleghaney at Fort-Pitt (or Pittsburgh), is remarkable for washing away its banks. The Indians have observed this; and accordingly the word Monangahela signifies the 'mouldering river.'

The water of the Alleghaney, and of its continuation the Ohio, is very clear. The principal branches of the Ohio are the following, beginning at Pittsburgh & descending: the Monaungahela, the Little Kanhaway, the Great Kanhaway, the Kentucke, the Shawanoe, and the Chesuke. All three empty into the Ohio from the south side. On the north side beginning at the mouth of the Ohio and going upwards we have the following, viz. the Wabash, the Great and Little Miami, the Scioto, the Hockocking, the Minnkingum and the Big Beaver. Not one of these waters, on the north side heads in very mountainous situations. They more commonly have their sources in swamps, extensive savannas &c.

But I had better not proceed: these matters cannot be of any consequence to you.

When you write to me, do tell me what are the particular subjects of natural history concerning which you are desirous of receiving information. If you knew how much pleasure it gives me to be employed, when my business permits me, in making inquiries for you, you would be very free in your commands. But I want to receive hints: the field which I tread is so immense, that I know not what part to begin to cultivate first.

I long to see the Indian Zoology which you were so good as to leave for me at Mr. White's. I wrote to him desiring him to put it into the hands of a Mr. Pleasants but I have never yet received the work. I have only seen the Irish edition of your London. May I ask for a copy of the London edition? In return you have a demand upon me for many American publications. I remain with the most affectionate regards, Dear Sir, Your obliged and obedient friend and Servant

B S Barton

P.S. Since this was written, Howell's Map of Pennsylvania has arrived in this city from London—

Meanwhile, Pennant's letter of 18 August 1792 may have crossed Barton's of 12 September enroute. He again requested that Barton be expeditious. "Remember the hourglass of LXVII runs fast." As an irritant stimulus he wrote:

How much we be obliged to Mr. Jedidiah Morse & Mr. Imlay; they do fling new light on the economy & topography: & will enable me to execute my plan of describing the coast of the United States with precision. They will appear in the intended publication of the Introduction to the arctic zoology. Mr. White will send you my general plan. Pray inclose the annexed to Mr. Imlay & send it to him by post. Write what you please with it.

The enclosed letter to Imlay read:

> *To Mr. Imlay at Kentucky*
> *Sir, the very honorable mention you make of me in yr excellent description of western America, demands my most grateful thanks. Would I make you any return if a copy of my new edition of the acct of London will be accepted. Pray command it as a mark of esteem. You mention p. 217 a round horned elk.*[1322] *I knew it not. Oblige me with a description or drawing. Drawings of any of the fishes of the Ohio will gratify me highly. Excuse this mode of writing, and think me yr wellwisher. Tho. Pennant.*

By *post* to Kentucky? Barton probably had to wait for an opportune traveler, and even then Imlay's whereabouts was unknown.

Gilbert Imlay, born about 1754 in Monmouth County, New Jersey, had invested heavily in land in Kentucky in the early 1780s about the same time that John Filson appeared. A *persona non grata*, Imlay had escaped to England prior to the publication, sometime before August, of his *Topographic Description of the Western Territory of North America* (London, 1792), mistakenly purported to have been written in Kentucky, and with a *Supplement* by J. Filson (New York, 1793).[1323]

Jedediah Morse (1761–1826), born in Woodstock, Connecticut, graduated from Yale in 1783, and became a Congregational clergyman of very strong Calvinistic leanings. After several other assignments he settled for thirty years in Charlestown, Massachusetts. His *Geography made Easy* appeared in 1789 (Boston), in 1789 (Elizabethtown, N.J.) as *The American Geography*, and in later editions as *The American Universal Geography* (Boston, 1793, and later editions), all extensively used in the schools. In recognition of his geographical services, the University of Edinburgh honored him in 1794 with an S.T.D. degree.[1324] What were Barton's thoughts when he learned of this?

The transmission of mails delayed, when Barton wrote next he seems not to have received Pennant's letter to Imlay, but gratefully acknowledged the gift of *Indian Zoology*, even though he was disappointed that it was not a colored copy. It is probably, he proudly asserts, the first copy to reach this country. It adds to his pride in his growing library, recently enriched by his purchase of books from the William Byrd Library, and his growing collection of drawings. He will happily send information to Pennant so long as he desires it, still hoping to be acknowledged for his contribution to the Introduction to *Arctic Zoology*. His work on the American Indian is progressing, and he is considering a London edition. Actually the work will not appear until 1812. His affection and admiration for Pennant impel him to request a copy of Gainsborough's portrait of him at fifty years of age. Although Pennant recorded that he answered Barton's letter on 31 January 1793, we do not know his response. Barton's letter of 9 November 1792 reads:

> *Dear Sir*
> *It is now a very considerable time since I have heard from you. I am desirous of learning whether you have received the three pacquets of manuscripts. Also the transactions, drawings, &c. But although you have not written to me I find I am not forgotten. Mr. White, at your request has sent me a copy of the 'Indian Zoology,' but informs me that Mr. Fowldes had not any coloured copies. I beg you will accept of my thanks for the*

1322 [*Cervus elaphus* L., 1758. MSW.]

1323 Wansey, "Jeremy," 39, considers Imlay's *Topographic Description* to be a "puff direct," to employ Richard Sheridan's characterization from *The Critic* (London, 1779). Ralph L. Rusk in *DAB*; *DNB*.

1324 W. Randall Waterman in *DAB*; George W. White in *DSB*; Drake, *Dictionary*.

valuable present. I have reason to think, this is the first copy of the work that has ever reached this country.

I wish to learn what progress you have made in the new edition of the 'Arctic Zoology.' I shall collect for you till I hear it is published; and even much longer if you desire it. By this conveyance you will receive a few drawings. If they are any service to you, pray make use of them. I hope you will pardon me for requesting that when you have done what you wish with them you will return them. They, as well as those which I formerly sent to you, belong to a large collection of mine.

When I wrote to you last I requested you to let me know what particular subjects of natural history you were desirous of receiving information about. Inform me, Command my services. If you wish drawings of any of our animals, or vegetables, let me know. Drawings shall be made for you, either by myself or by some other person free of any expense.—

The encouragement which I have received from my work on the antiquities and the indigenous inhabitants of this country has been very great. The quantity of new information, that has been communicated to me from various parts of the United States is so considerable, that I have it in contemplation to print the work in a larger form that of a quarto. I shall print an edition in Philadelphia, of the size, and agreeably to the condition, originally proposed. Whilst the desire of receiving information concerning America is so great in your enlightened part of the world, it has occurred to me that if an edition in quarto were printed in London it would probably meet with encouragement. I shall thank you for your candid opinion on this subject. I have written to Mr. White and sent him full information concerning my plan. I have also written to Messrs. Robson & Clark and several other eminent booksellers in London. Should these gentlemen give me any encouragement, I shall be able to send the manuscript and drawings in the course of next April or May.—

When I was in England I saw in the homes of some of my friends an engraving of you which was said to be a likeness. It was, if I mistake not, from a painting by Gainsborough. I should think myself honoured by a copy of the print. I have the honour to subscribe myself, Dear Sir, your friend & humble Servant, &c.

B. S. Barton

Philadelphia, November 9th

to Mr. Pennant

[On Envelope:] *To Thomas Pennant Esq.*

Downing, Flintshire,

Recommended to the particular care of Mr. Benji White, Bookseller, Fleet Street, London

[P.S.] *An edition of this work is to be published in England. The American edition will not make its appearance so early as was expected.*

BSB.

Again, Barton wrote, enclosing notes too late for the new edition of *Arctic Zoology*:

Philadelphia Dec 26th 1792

Dear Sir,

Have just time to enclose some additional remarks concerning our animals. Hope they will be of some use to You. Do let me hear from you. I have not received from Mr. White the plan of your Introduction to the A. Zoology. Adieu, Yours, &c. B. S. Barton

[Cover:] *Recommended to the care of Messrs. Benjamin White and Sons, Booksellers, Fleet Street, London*

From William Bartram at Kingsessing, 29 December, came a note: "My engenius, worthy Friend I received thy Letter this week dated. 1t. Decembr. together with the Book. which are exceedingly pleasing to me. I shall peruse this fine Volume [Pennant's *Indian Zoology*], and be carefull, untill I return it to Thee." Bartram then commented on the Snake Bird, and referred Barton to his "Journals of Travels."[1325]

Robert Leslie, mentioned in Barton's letter of 24 April 1793, "a very particular friend," was a clockmaker from whom Charles Willson Peale had picked up the idea of a mechanical exhibit featuring manufacture and inventions.[1326] Friend also of Franklin and Jefferson, Leslie went to England in 1793 accompanied by his wife and six-year-old daughter Eliza, who would become a prolific writer of short stories and kitchen recipes.[1327] Son Charles Robert Leslie, born in England in 1794, is described by the art historian E. P. Richardson as "an artist of great talents...a famous painter of anecdotic genre and the biographer of Constable."[1328] Leslie resided at No. 9, Blewit's Building, Fetter Land, Holborn. Imlay by this time was in England. Gainsborough's portrait of Pennant at age fifty (Figure 36) was used as a frontispiece for *Literary Life.*

Trichechus manatus, the manatee, from the word *manati* or *manate*, for teats used by the Galabi, a Carib people of French Guiana, is mentioned in Barton's letter. Barton says nothing about Pennant's praise of Imlay and Morse, though he must have felt the slight aimed at his tardiness in fulfilling his promises. He evidently discussed his own observations made on the geography of western Pennsylvania in 1786 in the letter of his own to Imlay, which he enclosed with Pennant's. Imlay was probably in London, and it is doubtful he ever received the letter.

Philadelphia April 24, 1793

Dear Sir,

This letter, together with a small pacquet, and some drawings, will be handed to you by Mr. Robert Leslie, a very particular friend of mine, and a native of this country. Mr. Leslie is one of our most ingenious philosophical mechanics. He has made several improvements of importance: especially in the nice art of watch and clock-making. It is his intention to settle in London for some time. If you should be in London any time I shall thank you to pay such attention as you may be able to do to my friend. He has long been a very respected citizen of a respectable city.

If you have not already forwarded to me the books which you mention, in your last letter, pray let Mr Leslie have them. He will take care to send them safely to me. Do not forget the 'Literary life,' I am very anxious to see it. I, also, greatly desire to have the print from Gainsborough's painting.—

I have not yet heard from Mr Imlay though I answered your letter to him.—Inform me in your next letter, if any person to your knowledge has published the anatomical history of the Trichaeus [Trichechus] *manatus of Linnaeus.—I am interested in knowing everything about this animal—Let me hear from you soon and very often. I am, with sincere and affectionate regards, ever Your friend, &c, B S Barton*

1325 HSP.

1326 Sellers, *Peale*, 259.

1327 Mary Tolford Wilson in *NDAW*; Drake, *Dictionary*, Sarah G. Bowerman in *DAB*.

1328 Edgar P. Richardson, *Painting in America* (New York, 1956), 175; Drake, *Dictionary*; Wm. H. Downes in *DAB*.

[Envelope:] *Mr. Leslie, No. 9 Blewit's Buildings, Letter Lane, Holborn* [in unknown hand.]

Pennant does not comment in surviving letters on the American visitors Barton sends as conveyors of his correspondence, but they no doubt enriched his knowledge of the United States, if they reached Downing. This friend of Barton's, Dr. Enoch Edwards, who delivered his letter of 8 May 1793, was Dr. Rush's first pupil, a surgeon during the Revolution, member of the Provincial Congress, associate judge by appointment of Governor Mifflin of Pennsylvania. He was traveling in England and Scotland in 1793. Rush recalled that his pupil "was idle and dissipated when a young man, but when he settled became an active, intelligent, and useful member of Society, and a friendly, worthy man."[1329]

Philadelphia, May 8th 1793

Dear Sir

A few days since I wrote to you, by a Mr R. Leslie, of this city. At the same time, I transmitted to you some drawings. This will be delivered to you by one of my friends, Dr. E. Edwards, one of our most eminent philosophical farmers, & a member of the legislature of the State of Pennsylvania. I ask for your friendly attention to this gentleman, to whom I refer you for full information concerning the politics and literature of this country.

Should anything prevent you from seeing Mr. Leslie, I shall thank you to put into Dr. Edward's hands the books which you mentioned.—He will take care of them for me.

Let me hear from you soon, very soon, & very often. Your letters always interest and make me happy. I am with unceasing affectionate regards, &c. Dear Sir, Yours, &c., B. S. Barton

To Mr. Pennant

Recommended to the care of Mr. H. Hughes, Printer, Turnstile, Holborn, London.

[in another hand] *By Dr. E Edwards,* [is on the envelope].

Again he introduced a traveller, and he included a few natural history notes. Joseph Barnes allied himself with the inventor James Rumsey in efforts to promote Rumsey's steamboat. After exhibitions of his steam-powered invention on the Potomac, witnessed and certified by President Washington, and the founding of a Rumsey Society in Philadelphia, he took his experiment to England. Rumsey successfully demonstrated the steamboat on the Thames in December 1792 and was preparing another demonstration when he died. John Fitch, watchmaker and surveyor, with the assistance of ingenious mechanics, had successfully challenged Rumsey in launching another steamboat. The contest between the two mechanical wits, and to raise essential support, had proved a divisive issue among friends in the American Philosophical Society, as for example Rittenhouse and Vaughan *versus* Franklin and Rush. Barnes had supported Rumsey when he published *Remarks on Mr. John Fitch's Reply to Mr. James Rumsey's Pamphlet* (Philadelphia, 1788). In this contest Barton had evidently taken sides with Barnes and Rumsey, and so by association with Rush. Mr. Barnes evidently was to pick up the letter of 26 May 1793, and travel out to meet Pennant. "Muscicapa nunciola" of Bartram is identified by Harper, *Bartram's Travels*, p. 570, as the Eastern phoebe, *Sayornis phoebe* (Latham).

1329 Corner, *Rush*, 311–312; Butterfield, *Rush*, 743 and passim.

Philadelphia May 26 1793

Dear Sir

An ingenious friend of mine Mr Joseph Barnes who is a native of this country, and the particular friend of the late Mr. James Rumsey, is the bearer of this letter. Your attention to him I shall consider as in the bonds of friendship to myself. You will find Mr. Barnes an intelligent and amiable man: intimately acquainted with the great Science of mechanics, and, perhaps, more capable than any other man of explaining the discoveries of his relative, Mr. Rumsey, whose merits were more remarkable in a foreign land, and whose memory is dear to all his friends.

Since the dates of my last two letters, I have been so tied down to the duties of my profession and to those of my lectures, as to have had no time for obtaining much information for you. The Sturgeon is now, and has been, for some weeks, very common in the Delaware &c. I shall have a drawing of this animal made for you. I doubt if it is the Acipensia aurio of Linnaeus. I have examined several individuals, which were caught in the Delaware, but cannot determine the species by the description of the Swedish naturalist. It is much to be regretted that this great man was so fond of describing in a few words. The general number of the dorsal squamae in our Sturgeon is eleven. Some have more, others fewer.

I send you a drawing of the Muscicapa [Sayornis] nigricans [Rocky Mountain Flycatcher] *of Mr. Catesby. Mr. Bartram in his Travels calls it Muscicapa nunciola* [*Sayornis phoebe*] *which is a very good name. For this little bird is one of the earliest harbingers of our spring. It arrives in Pennsylvania from the southward, about the twelfth of March, at which time very few of our native plants are in flower. It is commonly called Pewe, from the resemblance of its cry, or note, to this word. Has Linnaeus described this bird? It is a true Muscicapa.*

Be so good as to inform me, what progress Gmelin has made in the new edition of the Systema naturae? But, in particular, tell me, when your Outlines are to appear before the public?

The Story concerning Madogs' descendants is losing ground. Be assured it is a fable. Believe me to be, with sincere esteem, and with the most affectionate regard, My Dear Sir, Yours, &c.

B.S. Barton

To Mr. Pennant

Recommended to the particular care of Mr. Henry Hughes, Printer, Turnstile, Holborn, London, By Mr. Joseph Barnes no. 41 Kensington Lane

"At length," 29 June 1793, some more manuscript was sent off to London to be forwarded to Downing, too late, unfortunately, for *Arctic Zoology*, which had appeared the previous November. With this master zoologist, Barton had felt that he must "lodge at least some of the gleanings of [his] toil," but he had also been working actively on subjects he planned to publish himself. "Bones of the Mammoth," however, did not appear until 1814, and not in Europe, but in Philadelphia as *Archaeologiae Americanae*, its sixty-four pages made up of several articles. "A note on" the mammoth had appeared in his *Philadelphia Medical and Physical Journal* 2 (1805) Pt. I: 60–62; "Elephantine Bones" in *Supplement* 1 (March, 1806): 22–35; and "Additional Facts" on "Extinct Species of American Elephants in a Letter to Cuvier" in *Supplement* 2 (1807): 166–73.

The "large bound collection" as such of "numbered and arranged" drawings from which Barton selected three (redpoll, nuthatch, and coot or mudhen) survives today as a portfolio of loose drawings. These three sent to Pennant finally "sailed back" in 1796, and may be the drawings sent on loan to W. D. Peck. That Du Pratz was a poor observer Barton confirmed

by refuting Du Pratz's report that the Black[1330] bear was completely vegetarian, and not carnivorous. In his description of the elk[1331] Barton wrote: "The ignorant and superstitious believe that a little of the hoof scraped and given to an epileptic person is an infallible remedy. Risum teneatis?"—an idea to be scoffed at! To return to his letter, he places his love of his profession here before his love for natural history. This statement was made before the exhausting yellow fever epidemic that summer, and the consequent schism that developed among the physicians and populus over Rush's treatment.

How much the notes Barton sent to Pennant resemble those published by Sterling, *Barton's Notes*, is not clear. In the notes at the American Philosophical Society Barton does not go into descriptive detail, but emphasizes distribution as he has learned it, local names and Indian lore, with references to early American observers such as Catesby, De Pauw, Jefferson, William Bartram, Peter Pond of Connecticut, and Du Pratz. He also refers to European authors, Linnaeus, Buffon. A few comments on Barton's animals:

One is "of the Jerboa kind." Sterling (note 33) suggests this was perhaps a chipmunk, not the jumping mouse Barton later discussed with William Bartram and from whom he solicited a drawing. That the puma or mountain lion[1332] is a larger animal in northern regions of its wide range than in southern latitudes (Sterling, pp. 7 and 43) is now an accepted zoogeographic rule, associated today with variations in temperature limits. Notable is Barton's skepticism of the report of the occurrence of the South American llama in western North America (Sterling, 22), which he rightly conjectures is the "pacos," the Bighorn sheep[1333] of the Rocky Mountains that Lewis and Clark would meet within the next decade.

Barton's speculation that a native wild hog[1334] that he identified as "Tajacu" of "Mexico, Brasil, &c," citing the Tupi Brazilian word mentioned by Georg Marcgrave, is an early, if not the first, mention of the occurrence of the peccary so far north. The Collared peccary[1335] may have been encountered by Coronado in present New Mexico in 1539. Barton's letter reads:

> *Philadelphia, June 29, 1793*
>
> *Dear Sir,*
>
> *After a great many promises, I at length, send you some of the M.SS. I am in hopes, they may be of some service to you, should your Arctic Zoology be still unpublished. I assure you, however, that if they were ten times more valuable, you should be equally welcome to them.*
>
> *In looking over the M.SS. I am persuaded, you will find many things which were known before. I am afraid, you will find fault with the minuteness of some of my facts and observations. You will observe that I have followed no other method than that of separating the Quadrupeds from the Birds. I put down things just as they occurred to my mind, or as I found them related in my Common Place Book, without any attention to arrangement, or to style. I knew that under your hand, they would assume an order of method, and a happy precision of language, should you think of any of them worthy of publication. I wish you to believe I have laboured to be accurate.*
>
> *I have a request to make, if you think these MSS. of any service, and if it is not inconsistent with your feelings, I should be glad that you would announce to the Public, either through the medium of your Indian or your*

1330 [*Ursus americanus* Pallas, 1780. MSW.]

1331 [*Cervus elaphus* L., 1758. MSW.]

1332 [*Puma concolor* L., 1771. MSW.]

1333 [*Ovis canadensis* Shaw, 1804. MSW.]

1334 Tyson, *Philos. Trans.* 20 (1698): 137. "Mexico Musk Hog," mentioned as *Tayassu tajacu angulatus* Cope, *Pecari angulatus* Cope.

1335 [*Pecari tajacu* L., 1758. MSW.]

Arctic Zoology, my intention of publishing a description, &c. of the Bones of the Mammoth. The work I design to publish in Europe, where the Plates are to be executed by some able artist. I also intend to publish the history of our Fish, should you not undertake the task yourself.

I wish you would command my services in whatever way I can be of use to you. I hope, notwithstanding your advanced age, a kind Providence has many years of health and happiness in reserve for you. As to myself, I am young, healthy, and I hope, active. Next to my profession, I have no object so nearly at heart as the advancement of Natural History, and as long as you continue to amend editions of your valuable work, the Arctic Zoology, it will be my pride and pleasure to send you fresh observations as I think may be of any use to you. I consider your mind as the depository of Zoological Science in Modern times. There it is the duty of every labourer in the field of nature to lodge at least some of the gleanings of his toil.

I send you three drawings. One of them represents the Onaclonerta,[1336] *or Fringilla. The other, the Sitta* [Nuthatch] *mentioned in my letter of the 25th instant & the third a Coot*[1337] *of this state, & c. Should any of these birds be new, you will probably think it worth while to have them engraved. If they are not new, you will at least see that I designed to send you something of amusement to you. These drawings belong to a large bound collection from which I have taken them. This collection has been the work of several years, &, excuse me, I value it so much, that I cannot think of parting with any of the drawings. I send these three, however, that if you please you may have them copied, or published, only I beg that when you have done with them, you will send them to me by some very careful conveyance. I again beg pardon for this request. I am very confident that these drawings would be of more consiquence to natural history if they are new objects in your hands than in mine. I should therefore, leave them with you, did they not belong to the large collection which I mentioned, all the drawings of which are arranged and numbered.–*

Please let me hear from you soon. Every letter I receive from you adds to my ardour for Natural History; and, I assure you, if ever this Science shall receive any accession of knowledge from me, I shall not forget that it was my correspondence with you which greatly contributed to it.

My compliments wait on your son, whom I should be truly happy to be better acquainted with. I am with great respect, Dear Sir, Your obedient & obliged friend and Servant,

Benjamin Smith Barton

P.S. I have taken the liberty of sending to your care Dr Pallas's diploma from the A. Philos. Soc.[1338] *You will much oblige me by sending it to the Doctor by some very careful conveyance. B.S.B.*

[Envelope: in Pennant's hand:] *Answered Aug. 8 1793*

To Thomas Pennant Esq. To the particular care of Mr. Benjamin White and Son. Booksellers Fleet Street London

Accompanied with manuscripts and Three drawings

Answering Barton's letter of 29 June 1793, Pennant wrote 8 August:

1336 Onaclonerta, the Cherokee word for finch.

1337 [American Coot, *Fulica americana* J. F. Gmelin, 1789.]

1338 Pallas's election to the APS, 21 Oct. 1791.

I think I sent you an order for the arctic zoology: but now renew it: also for my literary life, & for the new edition of the history of quadrupeds. In the literary I have done myself the credit of mentioning you with applause & also Mr. Ritterholm [Rittenhouse]. *I never undertake to send anything; but make out orders which I flatter myself they will think worth executing...I have had a present of a noble pair of horns of the round-horned moose: evidently a stag & I suppose new* [Elk, *Cervus elaphus*].

Gmelin has published all the zoological part of Linnaeus. Pennant writes that he will hardly publish another edition of his *Arctic Zoology*, but is having his secretary transcribe Barton's manuscripts with additions from his own library.

He wrote again from Downing, 9 December 1793; commenting on news of the yellow fever epidemic in Philadelphia, then:

I am extremely interested in the welfare of the states. I have continued the introduction to the Art. zoology from the last page after ending at Nova Scotia, with beginning at New England. Shall pass thro' all the maritime states, and after reaching the Mississippi ascend that river through the interior states, reach the five lakes & conclude with dropping down the river St. Lawrence till I again reach the Gulph.

I shall only ask three questions. Does snow lie on the great ridges La[itude] *Pennsylvania any length of time. Are the intermediate vallies inhabited & are they populous. I have got a pair of grey moose horns weighing 26 lbs. My third is the nature of the fatal distemper, the numbers who dies: & how was it brought among you & was it known before.*

Barton received this letter 3 April 1794, and answered it 11 April. Meanwhile he had written on 26 March touching on subjects about which Pennant would request more knowledge. The horns of the animal Pennant called the "Round Horned moose" were instead of the American elk, as Barton had pointed out.[1339] Now, 26 March 1794, there is a female elk in Philadelphia:[1340] In his notes of 1793 Barton had considered the report that antlers of the elk are shed a "vulgar opinion, by no means founded in truth." Now he corrects his mistake: "however enormous," the horns are shed annually.

Philadelphia March 26 1794

Dear Sir,

I have not received a line from you for several months. and until lately, I have not had time to write to you. The dreadful epidemic fever which prevailed in Philadelphia in the months of August, September, October and part of November called for all the hours of the physician. You have, no doubt, heard of the epidemic. Its ravages were great. It destroyed about five thousand inhabitants of this fine city. Several of our physicians are no more. I continued in the city during the whole period of the prevalence of the disease and was sorely afflicted with it, for two weeks. I now, however, am in an happy state of health.

I should have sent to you by this conveyance, a number of drawings of our birds. But I did not know, whether, at this late period, they would be acceptable to you.

1339 See Stearling, *Barton's Notes.*

1340 Peale described his adventure with the elk in a lecture in 1799. Sellers, *Peale's Museum*, 105.

There is now in Philadelphia a live female elk (the elk with round horns), almost three years old. I have had a drawing made of it. It is too large to send to you and I have not time to make a copy.

I find that I have been mistaken in assuring you that the male elk does not shed its hornes every year. These hornes, however enormous, undoubtedly do fall off every February or March. They attain to their full size again about the beginning of August.

In addition to what I have formerly written to you concerning the food of the elk, I beg leave to inform you that this animal eats both the Kalmia latifolia and the Rhododendon maximum.

I took the liberty of mentioning to you formerly that the several drawings which I have at different times, transmitted to you, belonged to a large collection in my possession. On this account, among others, they are very valuable to me. When you have done with them be so good as to have them left with Mr. White, who I shall request to send them to me, by some very careful hand. The large drawing by Mr. W. Bartram, representing a species of squirrel, &c., is peculiarly valuable to me.

I have at length, determined to undertake the history of our fish upon the plan of your excellent Arctic Zoology, which is my favorite work in Natural History. Do inform me whether you think there will be an arrangement for the work in England. In the United States, though we are growing fast into manhood, I cannot expect to be rewarded for so laborious an undertaking. I am not entirely insensible to the love of reputation; but, like hundreds of others, I must not, in my literary pursuits, lose sight of what is more substantive than mere reputation—that which brings me the necessaries, and the comforts of life.

You, my dear Sir, who have grown old in the field of nature, whose sickle has for many years reapt abundant harvest, and nature's treasures, may add to the reputation of my work, by your suggestions and advice. Do then let me hear from you on this subject.

Do you think that a drawing and an ample history of the elk would be acceptable to the Royal Society?

I am extremely anxious to hear from you. Because I am somewhat apprehensive that, for a considerable time to come, the intercourse between Britain and the United States will be much less frequent than it has been. At this very time, an embargo is laid upon the vessels in the harbours of the United States, and we are arming, with one mind, for our defence, and for the preservation of the blessings of liberty, and plenty. I am, Dear Sir, Your affectionate friend, &c.

B S Barton

[Pennant:] *answd June 22 1794*

[Envelope stamped:] *Paid Thomas Pennant Esq. To the care of Mr. Benjamin White, Bookseller, Fleet Street, London*

From this time on until at least 1812 Barton considered publishing a work on fishes, persuading several correspondents and his brother Matthias to collect and detail the habits of different species, and Matthias to make drawings of some, but the results did not see publication. In his *Discourse* he suggested the interesting projects for research awaiting a devotee of the subject. In this letter he foresees the difficulty awaiting the publication of natural history subjects in America and his need to be practical. Once again he pronounces his love and loyalty to the new nation as the shadow of continuing conflict looms over the two correspondents.

Barton's letter of 11 April 1794, sent from Philadelphia to Halifax to be carried to England, replied to Pennant's queries of 9 December. Pennant was now planning his *Outlines*

of the Globe (London, 1798–1800) and so was interested in geography and the westward movement of peoples. Commenting on the yellow fever epidemic of the previous summer, Barton referred to Dr. John Lining (1708–1760).[1341] Lining believed the fever was contagious and that it originated in the West Indies. His account of the occurrence in Charleston in 1748, published in 1753, was reprinted in Philadelphia in 1799, but in the intervening years Dr. Rush's conviction that the fever was of local environmental origin had a certain following. Barton affirms his staunch support of his country in the dispute with Britain.

Philadelphia April 11, 1794

My Dear Sir

I wrote to you on the 16th of the last month. A few days after, viz on the third of April, I received your letter, dated Downing, December 9th. I take the earliest, and, indeed the only, opportunity of answering it. Vessels are prohibited from leaving the harbours of the United States, and this will go by the British Packet, from Halifax.

I feel flattered by the solicitude which you express about my escape from the epidemic fever, which lately afflicted our city. I have had a narrow escape from it: but, thanks be to God, am now well.

In answer to your queries, I shall observe that, in a general way, snow continued, or lies, for about four months, upon the great ridges of mountains, in Pennsylvania. It falls about Christmas, and continues till the beginning of May.

The intermediate vallies are inhabited. They cannot be said to be very populous, but they are rapidly increasing in population. I here speak of the vallies between the great ridges, some of the vallies between the smaller ridges are already very well peopled. The great valley of Cumberland is thickly settled, and is one of the finest parts of Pennsylvania.

There are fine plantations nearly on the summit of the Alleghaney mountains.

With respect to your question concerning out late epidemic We physicians are, I believe, all agreed, that it was the disease called, in the West-Indies, the Yellow-fever. In general, it was introduced by a chill, succeeded by inflammatory symptoms, and ending in extreme debility. I am preparing an account of it for the press. In the meanwhile, to enable you to form a pretty accurate notion of the nature of the disease, I refer you to a paper by Dr. John Lining, in the second volume of the Essays and observations, Physical & Literary published by a society, at Edinburgh. Dr. Lining saw the disease four different times at Charleston, in South-Carolina.

About five thousand persons died of the late disease. It was almost entirely confined to the city, and did not spread when it was carried into the country. This fever was, undoubtedly, imported from the West Indies. It has been imported into Philadelphia and other towns of North-America, previously to the last summer. It was in Philadelphia in the years 1740, 1747, and 1762. Dr. Lining says, it was imported into Charleston, in the years 1732, 1739, 1745, and 1748. It was brought into New-York, in 1702.

Philadelphia has entirely recovered from the ravages of the disease. The winter has been a very healthy one, and so has the spring so far.

I shall avoid sending any political news to you. I shall only observe, the Congress of the United States are, at this time, deliberating in Philadelphia,

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[1341] Austin, *Medical Imprints*, no. 1155.

upon some of the most important business that has been the subject of their discussion since the memorable 4th day of July 1776. I believe the embargo will be continued, at the expiration of the thirty days. Indeed, I am inclined to think, that all intercourse between us and Britain will be suspended, until she shall make full restitution to us for the spoiliations she has committed upon our commerce. Every American bosom is now warm. We are arming with vigour. The history of mankind has never exhibited an instance of such unanimity as at this moment, actuates the people of the United-States.

I wish it were in my power to transmit to you a copy of the third volume of the Transactions of our Society. But this I cannot do: for no vessels can leave the United-States at this time. The Society will, I imagine, publish a fourth volume in the course of the present year.

But let me hear from you, by the first conveyance. I rejoice to find, that you have continued the introduction to the Arctic Zoology.

Believe me to be, my dear Sir, your most sincere and affectionate friend, &c.

Benjamin Smith Barton

P.S. I have lately received a noble pair of Elk's horns. They are at your service, should you wish to possess them.

B.S.B.

[Cover:] *Thomas Pennant, to the care of Mr. Benjamin White, Bookseller, Fleet Street London.*

...[TP:] *ans June 22, 1794*

Pennant wrote 22 June 1794: "I shall collect all your drawings, as soon as possible, & send them to Mr White's. I am greatly obliged to you for the sight of them. Mr. Bartram's are the neatest I ever saw in the way of penmanship. I shall endeavour to go on with my account of North America, but I fear my powers." Was Pennant's comment on Bartram's neat penmanship meant as a hint to Barton that he found his difficult?

Barton repeated his offer to lend William Bartram drawings, forgetting for the moment, perhaps, that mail on the high seas had now become unpredictable. Of the subject of the "large drawing" that he recommended as a frontispiece to Pennant's forthcoming *Outlines of the Globe*, we have no clue. Barton had received *Indian Zoology* but not *Arctic Zoology*. It, however, did finally arrive as a presentation, as well as *Literary Life*, which treasure Barton presented in 1804 to his very young son. This undated letter was probably in answer to Pennant's missing letter of 28 January 1795. In it Barton bids adieu to the British zoologist through whom he had hoped to attain international recognition, yet who remained an inspiration to him. The disorder of his final statements illumines his emotions and sympathy for the French in revolution. It reads:

Philadelphia [undated, 1796]

Dear Sir

I received your letter dated January 28 this day. I am greatly flattered to find that my opinions concerning the Welsh Indians has amused you. I am also gratified in being told, that I have thrown any light on the subject of the Elk. I shall certainly send the drawings of the horns of the carabou; perhaps both drawings & horns.

I have received your Indian Zoology, for which I am greatly obliged to you. Your Arctic Zoology and your London I have not received. By what conveyance were they sent?

Although the drawings have not turned out as well as I wished. I send you a few more. They belong to a large collection, which I formerly

mentioned. When you have done with them, I wish to have them. The Plotus[1342] *I think is new.*

I rejoice to learn that you have completed your outlines of the globe: for everything you give the world makes it wiser; and as to myself, I can safely say, infinitely happier. How natural, therefore, is it for me to be interested in the receipt of the 'literary life' which you mention. Let me have it.

You are not mistaken in supposing that my dear America is happy. It is the empire of national liberty. It is the theatre on which mankind are to act the part of wisdom & of virtue. But excuse me. I am very partial to my country: not however, so partial, that I cannot love other countries, and to love & revere their good and great men. You drew your first breath in that very portion of the world which endeavoured to deprive America of the greatest gift heaven has bestowed on man.

Do continue to command my services. Let me hear from you often. What will become of France? It would seem that not only individuals but also nations become maniacal. I must, however, be candid. Thousands in this country have no fears concerning the event of the French Revolution. They say it will settle down into some worthy constitution. I wish your neighbours every success.

But I love not politics. My happiness is wrapt up in other things. The volume of nature is my subject. My respects to your son. Adieu, Dear Sir, I am with great sincerity &c.

B. S. Barton

P.S. The large drawing by Mr. Wm. Bartram has so much merit, that, I wish it to be seen by Sir Joseph Banks, or: should it not make a beautiful frontispiece for one of the volumes of your outlines? You have permission to copy it, to publish it if you please. I wish it returned when you have done with it. I hope you will not let more than one copy be taken.

B.S.B.

I have many more drawings if they will be in time for you, you may have them. I send you a specimen of the skin of the carabou[1343] *well dressed.*

Pennant's last known letter, probably crossing Barton's, mentions manuscript that did not arrive—mail on the high seas had become unpredictable. He would still use notes on American trees in some unspecified work. Age and infirmities afflict him, but he is "continued" in the birth of a grandson.

From Downing he wrote on 16 April 1796:

I have lately received yr favor of Decr 9th 1795. How much mortified am I to say that yr acct of the sizes of American timber never reached me. Be so good as to repeat it for it will be of the first use to me. I am now publishing the history of Whiteford my native parish & of Holywell the adjacent. Please to send to Mr White for it & it shall be yours.

I have just printed the first sheet of my view of Hindoostan in large qto finest of paper & most elegant print. It will take a year in printing. On June 26th I shall enter my 71st year. On April 6th last year I broke my knee-pan, lay recumbent near 7 weeks, & in that attitude composed much of my Whiteford. I am now nearly as active as ever. Can walk almost to any

1342 *Plotus anhinga* L., now *Anhinga anhinga* L.

1343 [Caribou, *Rangifer tarandus* L. MSW.]

> *distance & ride as much. I cannot indeed vault on my horse as usual: that is a trifle...*

Pennant died 16 December 1798, at the age of seventy-two.

Barton had found his correspondent a happy inspiration, considering him "the greatest zoologist his country has produced." In the Introduction to *Fragments* he referred to him as "My learned and candid friend Pennant (whose name I never mention but with pleasure and gratitude; whose works have contributed much to my information, and whose example has stimulated me to the study of natural history."[1344] In *New Views* it had been "My learned and much valued friend."[1345] He had not, however, accepted unchallenged all of Pennant's statements. He found, for example, Pennant's "notions" to be "ingenious" but he could not support the ideas that all animals of America were identical with those of Europe and Asia.[1346] America, Barton had learned, had numerous distinct kinds. His dedication of the first volume of *Philadelphia Medical and Physical Journal* to David Pennant read:

> *Your father's letters to me, the flattering manner in which he introduced me to the public, were among the most powerful and permanent incitements to my labours...In the study of Nature, I have passed much the most happy period of my life: and I flatter myself that the most happy and most tranquil portion of my remaining days will be connected with the same delightful study.*

The letters to Pennant had stimulated Barton to put his zoological notes into some semblance of preliminary order for a zoology of America, its completion a hope unfulfilled.

Barton in a memo commenting on Pennant's "very honorable mention" of him in *Literary Life* wrote:

> *I think I have not been ungrateful to my friend. Both before and since his death, I have always spoken of him in my writings, in terms of high respect. I obtained his admission into the American Philosophical Society; and afterwards called my first born son Thomas Pennant Barton. Thomas, indeed, after my father. When I dedicated to Mr. David Pennant, the 2d part of my Medical & Physical Journal, I spoke of the father in terms of very high eulogy.*[1347]

No doubt Barton had been gravely disappointed that his zoological notes had not arrived in time for the new edition of *Arctic Zoology*. Even if they had, would Pennant have been more generous in his acknowledgement than he was with Banks's notes on his Newfoundland trip?

Other British Correspondents

Contacts with Europeans continued to grow as an important part of Barton's scientific career, as an officer of the American Philosophical Society, and of his cultural life. He often mentioned in his letters to scientists whose work he admired of being in the "Ultima Thule," although at the same time he usually stressed his intense pride in being an American. He took advantage of his position as an officer of the American Philosophical Society to further his

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1344 *Fragments*, xvii.

1345 *New Views* (1797, ed. 2 1798), "Preliminary Discourse," xvi.

1346 *New Views* (1797, ed. 2 1798), "Preliminary Discourse," cii.

1347 Misc. notes #2, Barton papers, APS.

contacts with naturalists. There came the opportunity of sending a letter to Sir Joseph Banks[1348] (1743–1820) by way of John Churchman,[1349] whom he recommended highly, and of requesting Banks to forward a letter to Dr. Sparrman in Stockholm by the earliest safe conveyance. Barton wrote 12 October 1792:

> *Sir,*
>
> *...I have it not in my power to inform you of anything new in the science of nature. With respect to Natural History my country may be called the Ultima Thule. I hope, however, that we are growing into more consequence in this respect, as well as in others. I think, I have informed you, in my letter by the Harmony, that the Podophyllum diphyllum of Linnaeus is not a Podophyllum.[1350] Neither is it a Sanguinaria. I have had an opportunity of paying much attention to it, and I find it a new genus. The number of the stamina is uniformly eight. It must be thrown into octandria, perhaps, at the beginning of the class near Tropaeolum* [Nasturtium].—
>
> *Our Philosophical Society are now printing a third volume of Transactions. The delay in publication has been, in a great measure, owing to the want of paper, an article of which there is a great demand in our States, more especially, I believe, in Pennsylvania. I have the honour to Subscribe myself Sir, Your Obliged and Humble Servant &c Benjamin Smith Barton.*[1351]

One letter to Banks bore a copy of his *Proposals* for printing his work on American antiquities, to which Banks responded 4 March 1793, and to which Barton replied 26 May 1793 outlining his progress, and announcing its delay because of new material received, but promising to send a copy. Again he called attention to the "puerile prejudices" of such European historians as his principal at the University of Edinburgh, Dr. William Robertson, and he emphasizes the success of his country's republican government in the happiness of its people:

> *Your opinion concerning the antiquity of the American-world has afforded me much pleasure. Its age is more emphatically declared by the structure of its mountains, by the vast number of the species of its animals, and its vegetables, and by an hundred other circumstances, which strongly solicit the attention of the philosopher, and dissipate those puerile prejudices which disfigure and disgrace the writing of some of your most eminent European authors. I hope the reign of science has commenced, even in this Ultima Thule. But, though nature shews the symptoms of her manhood here as much as she does in other portions of the globe, we Americans shall not dispute concerning our antiquity. We shall be content to claim an elevated place in the scale of human happiness; and surely it will not be vanity, but it will mark our reverential gratitude to him who made us, if we venture to assert to the nations of the world, that we are the happiest of people.—But, excuse me.—your candour and your science have drawn from me the remark.*

1348 Desmond, *Dictionary.*

1349 John Churchman, Quaker, born in Maryland, surveyor and mapmaker whose explorations of the Earth's magnetic field (1790) was branded "groundless" and "whimsical" by Rittenhouse, died on the passage home from Europe in 1805. Drake, *Dictionary.*

1350 *Jeffersonia diphylla* (L.) Pers., described in 1805, Twinleaf. IPNI. ITIS.]

1351 Banks, Correspondence Vol. 2, no. 82. Royal Botanic Gardens, Kew.

I shall not forget to send you, from time to time, specimens of our indigenous plants. At present, I have not leisure to make a selection, being greatly engaged, particularly with my professional duties, and with the duties of my academical station.—I have, however, sent a few specimens. I shall be glad to have your opinion concerning them. The Aralia I do not find described. I have called it A. montana, as it grows upon the Blue-Ridge, in Pennsylvania. The Rhus is described by Mr. Marshall in his Arbustum Americanum. But, you have justly remarked, that it is not easy to 'comprehend' our American botanists; and Marshall is, undoubtedly, supreme in the obscure, and unintelligible.

? Do you possess the two first volumes of our Philosophical Society? If you do not, I shall do myself the pleasure of transmitting them to you, and of begging your acceptance of them.[1352]

Typically he introduced Mr. Joseph Barnes, mentioned above, "an ingenious mechanical philosopher, and a man of real worth, is the bearer of this letter." Barnes was brother-in-law of James Rumsey (1743-1792), American inventor.[1353] Filed away among Barton's papers titled "Concerning Bartram's Garden, etc." is the note:

List of plants sent to Sir J Banks, by [courtesy of] *Mr. Jos. Barnes, in May 1793*[1354]
No. 1. Rhus canadense, Marshall, Arb. p. 129 & 130.
No. 2. Polygonum [Smartweed]. *Habitat in Pennsylvania.*
N. B. This is the Pol. which I gathered in the marsh, near Bartram's; flowers fine red.
No. 3. Habitat in Pennsylvania—an Polygala?
No. 4. Aralia—Habitat in Pennsylvania. Aralia montana (mihi)
No. 5. Habitat in Pennsylvania. Panax trifolium? [Dwarf Ginseng]
No. 6. Habitat in Pennsylvania. Potentilla norvegica [Norwegian Cinquefoil]

Fearing that a letter to Banks had gone astray, Barton wrote 23 January 1796:

Sir,

On the 22d of April, last, I received your very polite letter, dated December 17th preceding. This letter I have, long since, answered; but I hear that you may not have received my answer, as the receipt of several other letters, which I sent to England, by the same conveyance, has not been acknowledged.

For the fragments of American pottery I should be much obliged to you. No person would value them higher than I would. I should be glad to have an opportunity of inspecting them, previously to the publication of the laborious and extensive work in which I have been long engaged.[1355]

Some very interesting discoveries have lately been made, upon opening an ancient barrow, or tumulus, in the western country. In this tumulus, implements of copper, much altered by time, were found. To me this circumstance is not at all surprising. For I have long believed, that the

1352 BM, Ms 8098, 208-209; Barton's rough copy, APS.
1353 Carl W. Mitman in *DAB*.
1354 Barton papers, APS. Jane Loring Gray, *Autographs*, 4: 77, HUH.
1355 Barton's work on early American Indian culture was not completed.

ancient earthen fortifications, and the larger tumuli, so common in many parts of North America, were the work of the Mexicans or of a people nearly in the state of Society and improvement of the Mexicans; and we know that the Mexicans made axes, &c. of copper. Some mighty revolution has affected the population of North America; but at what period, it is difficult to determine. I am inclined to think, it was long before the first voyages of Columbus to America.[1356]

Our Philosophical Society are about to print a fourth volume of their Transactions. It will contain several papers relative to natural history.

I shall think myself honored by your informing me, whether the works of Plukenet are to be procured in England.

I am, with great respect, Sir, Your obedient and humble servant, &c., Benjamin Smith Barton, Philadelphia, January 23rd, 1796.

To Sir Joseph Banks, Baronet, Soho Square, London, Exact copy[1357]

The illustrations in Leonard Plukenet's *Opera* (1691–1705) would lead him to a greater understanding of species sent to England from Virginia and Maryland, especially the species sent by Banister, Clayton, Hugh Jones, Vernon, and Krieg.[1358]

Banks took advantage of two traveling Austrian visitors to London to entrust them with a letter of 31 December 1802 to Barton, which he received 7 March 1803. Aloysius Enslen was an old acquaintance of Pursh. It was Adrian Richard van der Schot who evidently carried back to Prince Lichtenstein in Vienna the plants collected by Enslen on his tour of the country as far south as Lake Pontchartrain in Louisiana.

Eagerly awaiting new issues of papers of the Royal Society, and a bit chagrined in institutional rivalry that copies were reaching the Boston Academy regularly, but not Philadelphia, Barton wrote to Banks 4 June 1804, the letter marked as received by Banks 25 July:

Dear Sir, I understand, that a copy of the first part of the 6th vol. of the Transactions of our Society is forwarded to the Royal Society. I take the liberty of observing to you (not officially, for I have nothing to do with that part of the business of the Society), that although the American Phil. Society regularly forward to the Royal Society, their Transactions, they do not receive, in return, the Transactions of the illustrious body of which you are president. I beg you, Sir, to keep this circumstance in view, as I have always believed, that the Royal Society take every possible interest in the diffusion of useful knowledge; and, of course, in the interchange of their literary labours with those of other societies, in other parts of the world. I find, that the Transactions of your Society are regularly sent to the Boston Academy, an institution highly respectable, but which does not so frequently transmit its Transactions to the Royal Society: for its labours are more slowly progressive than those of the American Philosophical Society.

The Librarian of the A. Phil. Society has taken the liberty of transmitting, under cover to you, copies of the Transactions for some other Academies, &c. He was unwilling to put you to this trouble; but the present state of affairs between the powers of Europe make it necessary to adopt some effectual method of putting our brethren in Britain in possession of

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1356 Barton submitted his paper on Palenque in Mexico first to Good, then to Tilloch in 1813. It was not published.

1357 BM ADD 8098. 415. Barton's rough copy, Barton papers, APS.

1358 Plukenet's significance for early American plant collections is considered in Ewan & Ewan, *Banister*, 160, 143, 153. These botanists in Desmond, *Dictionary*.

our labours: and none so effectual as that adopted, presents itself. I pray you to excuse the liberty.

...I hope the Royal Society have received my Elements of Botany, which I transmitted to London, under cover to you, some months since.

With great respect, I remain,

Your very obedient & obliged friend, &c.[1359]

Barton had also announced the safe arrival of Humboldt with rich collections. The difficulties of sending letters and books across the Atlantic because of the political problems of Europe, whether between England and France, or France and England with the United States is touched upon in several of Barton's letters. Banks responded from Soho Square 10 September that same year. He had distributed copies of the *Transactions* "to the several persons & Societies for which they were intended," but he now requested that the American Philosophical Society appoint a London agent to handle the Royal Society publications that were to be forwarded to America. In response, William Vaughan, successful London merchant, brother of John Vaughan of the American Philosophical Society, was appointed by the Society at a meeting 2 November 1804.

Still hoping to obtain a copy of Plukenet's works Barton reminded Banks when he wrote 27 December 1806:

Sir,

I have never yet been able to procure the two works of Plukenet so frequently referred to his Almagestum & Amaltheum. As I am about to put to press my Florula of Pennsylvania, New Jersey, and some other adjoining States, Those works for the purpose of reference, would be truly valuable to me. Can you possibly put me in the way of procuring copies of the works? I hope you will excuse the liberty.

My Florula will comprehend the names & characters of a very great number of N. American plants of which no notice is to be found in the Flora of Michaux.

With very high respects, I remain, Sir, Your obedient & obliged Servant, &c.

B. S. Barton[1360]

Barton was able to display his copy of Plukenet's *Opera* to Muhlenberg in 1813. His "Florula" was never completed. His last letter to Banks patently solicited membership in the Royal Society; expressed concern over the safe arrival of his paper on the *Siren lacertina*; and showed his continued interest in rattlesnakes. Dated 29 November 1807, it reads in part:

We have discovered an entirely new species of Crotalus, a living specimen of which is now before me. It is of one uniform colour, a deep black; and by this circumstance, as well as the structure of its operculum, or rattle, the form of the scales, &c. it must be considered as an interesting addition to the number of the Amphibia Serpentes. I call this animal,—the bite of which is much dreaded by the Indians,—'Crotalus niger.' I shall transmit my account of this serpent to the Royal Society, if you think that papers of this kind will be deemed acceptable to that learned the illustrious body; among whom, I take the liberty of saying, that I have long felt a desire to be enrolled as a member. I am extremely desirous to possess a

1359 BM, ADD 8099. 333. Barton's copy, Barton papers, APS.

1360 Autograph Collection, Botany Department, Natural History Museum, London.

copy of the Catalogue of your library. Can you conveniently favour me with One?

I have the honour to subscribe myself, Dear Sir with very highest respects,

Your most obedient & humble Servant, &c.

B. S. Barton

To The Right Honorable Sir Joseph Banks, Baronet, President of the Royal Society, &c. &c.

London. exact copy.[1361]

Barton may not have found his correspondence with Banks as rewarding as he had hoped. Although Banks was active as president of the Royal Society, his botanical activity was now very limited. To Daniel Solander (1736–1782), Swedish naturalist, was entrusted the care of his herbarium and the description of plants they had collected together on Cook's Voyage, and then to Jonas Dryander (1748–1810), also Swedish, while Banks turned his concern to problems of economic development. Recorded in Dryander, *Banks Catologus*, are copies of Barton's *Memoir concerning the Rattle-snake*, *Collections*, and *Fragments*. There survives also the suggestion that Barton had solicited a loan from Banks, although we have found no hint among Barton's papers. Whether the request was made by an impoverished medical pupil, or whether patronage was sought for publication of his natural history pursuits in the same manner in which the Bartrams had received financial aid by the Crown, is not preserved. The Bartrams' aid had come before the Revolution. Banks had been elected to the American Philosophical Society, his thanks read 18 April 1788. He had sent an account of "pure iron" found in South America, but he did not become an active correspondent.

A warm and friendly letter came from one who had been a friend in need to the poverty-stricken youth in a far-off land. It demonstrated so well John Coakley Lettsom's character, generosity, and sympathy for the new Republic. On 26 August 1800 he covered a wide range of interests:

Dear Doctor

Accept my acknowledgements for the favour of thy letter dated June 1, accompanying two valuable pamphlets, which I have pursued with satisfaction & information; and am happy in finding the indigenous history of your extended continent pursued by one whose abilities are so well calculated to elucidate it, and which I speak from ample conviction.

With this letter I enclose my Naturalists' Companion [ed. 3, 1794], *which I think I neglected to do before the present time.*

Vaccine inoculation is becoming more and more general in England and on the European continent; about 16,000 have had the disease, if disease it can be termed, without any case of fatality and about 3,000 have been inoculated again with the common smallpox, without conveying any disease; so that probably soon, no other, than the cowpox, will be adopted here. I imagine a fatal case will never occur; as there is rarely more than one pustule.

In some money concerns with my bookseller, C. Dilly, I've took thy note, but I never thought of interest, which I learnt was paid with the principal.

I have heard you possess a large collection of subjects of natural history, but I imagine they are not yet arranged as a regular systematic museum; your situation; the novelty and grandeur, of your continent,

[1361] Barton papers, APS. Klauber, *Rattlesnakes*, considers melanism.

equally point out this propriety of some national receptacle, of your antient monuments, with those of more recent date with the vast indigenous products of the three kingdoms. Your ores, and precious stones are valuable, as well as your vegetables, and your animals, without thy aid, would have been still in nubilus,—and I should be glad to know what progress you have made, as a great nation. I believe your library is considerable. I am not ignorant that in a nascent state; the cultivation of the soil will be the first, as it is the most important object, then succeeds with a superabundant product of that soil, exports, and of course imports; manufactures follow; with at length in many members of the community, a superabundant wealth; this begets luxury, & a refinement in enjoyments, in which the mental, take the lead of corporal powers; and literature in its various departments, and science in general, are cultivated, by persons of ease & leisure, before they have debilitated the power of mind and body, by effeminacy and sexual indulgence. You seem to me to have arrived at that state most favourable to just taste & national pursuit—Your infant Hercules has strangled the Serpent, and has acquired a vigour, that has not yet degenerated to turn the distaff—I know that many men of Science, are discouraged from the chaos around them; and the cool reception and little encouragement they experience, in offering improvement, that counteracts the lethargy of habit; but remember that a clouded morning, Sun, in its useful career, rises to meridian splendor. There is so much good sense in America, and such powerful means in its inhabitants, that I cannot but believe, that any useful plan will ultimately succeed. I well recollect the difficulties I encountered from the College of Physicians, and my brethren in general, when I first propounded to the Medical Society of London. I have lived to see it possess the first medical library in the world, unless that library can claim a...[1362]

This much of the letter was among Barton's papers. Lettsom had helped establish the library of Pennsylvania Hospital by donation and by acting as agent for the purchase of medical books, and so a missing part may have been taken to the Hospital library for reference. The end of the letter was found in the Historical Society of Pennsylvania:

Four years ago I stood forth singly for establishing an Infirmary at Margate for seabathing the poor of London; it is now established and annually I travel three nights and two days to visit it, and to hear a sermon at Margate, for its benefit, and the day after dine with the corporation which together bring us in some hundreds a year, and yet for two years I was ready to sink with dispair; buoyed up however with a conviction that in a liberal and sensible nation whatever is right will succeed, I perservered to final success. [It] *is my warm desire to see your ardour excited in the pursuit of nature and science, instead of eternal shares to Mammon whose gothic power levels science, narrows the mind and debilitates every function but that of avarice. Let me hear of your national pursuits and believe me, Sincerely, &c.*[1363]

Lettson had completed his letter while waiting for his chaise. He acknowledged a "botanical publication," surely *Elements*, in an encouraging letter 20 December 1804, and

1362 Barton papers, APS.

1363 Barton correspondence f. 45, HSP.

sent "a small packet." Frederick Hall wrote to Barton from London 16 June 1807, "Your letter to Dr. Lettsom procured me a friendly reception. He is much ingaged in his profession but injoys good health, and is extremely agreeable in his manners and conversation."[1364] In a letter that Lettsom marked as received 17 January 1810, Barton acknowledged a "kind letter" and "some interesting works" from both Lettsom and Good. "I am sorry, that time, being much occupied with my public lectures (to a class of near 300 students), and with my practice, &c. I have little liesure to write to you; and I shall not be able to write to Mr. Good at all. To both of you. I shall write fully in a short time; and, perhaps I may be able to furnish something to Your Society."[1365]

Lettsom had donated several of his publications to the American Philosophical Society, to which he had been elected 19 January 1787. Works in Barton's library are *Natural History of the Tea-Tree* (London, 1772); *Memoirs of John Fothergill*, ed. 4 (London, 1786); and *Naturalist's Companion*, ed. 3 (London, 1799). The London physician who had loaned money to the needy student had maintained his friendship. In 1811 Lettsom wrote to William Thornton in Washington on 22 July, "I hear with great pleasure the wonderful progress of science in America, its increased population, its interior improvement, and domestic happiness."[1366]

Erasmus Darwin (1781-1802)[1367] grandfather of Charles and an influence on his thinking, wrote from Derby, 3 July 1793, probably in answer to Barton, that his *Botanic Garden* (London, 1791) had been out about a year, and that he would send a copy when he knows how to address it. The first part of his *Zoonomia; or, the laws of organic life* (London, 1794-1796) he expected about Christmas. He had not heard whether or not about a dozen copies of *Loves of Plants* shipped to Philadelphia had been sold.[1368] In his *Elements* Barton refers to Darwin's *Phytologia* (Dublin, 1800), and Darwin's belief that there are veins and arteries in the corolla. Barton experimented with the juice of *Phytolacca* but could not see that the veins returned the dye he had injected.[1369] Whether or not *Phytologia* had been a gift, Barton presented his copy to William Bartram.[1370]

"To James Edward Smith, M.D. F.R.S., President of the Linnaean Society, Member of the Royal Academies of Turin, Upsal, and Lisbon; and Member of the American Philosophical Society, &c." wrote Barton in the dedication of his *Collections*. "It is with pleasure I declare to the public, how much I admire your exertions for the extension of that amiable science which both of us cultivate: you with the happiest of success; I with humble ardor." Smith had been elected a member of the American Philosophical Society 15 January 1796.

Barton had met James Edward Smith on one of his student visits to London. It was possibly Smith whose visit he had missed on the day of his departure from London. The one letter we found remaining among Barton's papers reads:

> *Hammersmith May 27th 1796*
> *Dear Sir*
> *According to my promise in my letter of April 29 (enclosed in a parcel to the Revd. Mr. Collin, rector of the Swedish Church in Philadelphia) I*

1364 Barton papers, APS.
1365 Gilbert Collection, CPSP.
1366 Wm. Thornton Papers, 4: 569, LC Manuscript Room.
1367 Ernst Krause, *Erasmus Darwin* (London, 1879), portr.; frontispiece with a preliminary notice by Charles Darwin. Dawson, *Banks Letters*; *DNB*.
1368 Barton bound correspondence (1778-1815), f. 13, HSP.
1369 *Elements*, Pt. I, 140-141.
1370 Ewan, "Barton's library." Darwin's *Botanic Garden*, *Zoonomia*, and *Phytologia* are in LCP.

have now the pleasure to beg your acceptance of some dried specimens from New South Wales, & my Syllabus of Botl. Lectures.—[1371]

I also send you my 3d Fasciculus of Plant Ic. ex Herbario Linn.[1372]*— price one guinea of wch please to keep an acct till I know what I am in your debt for the Transactions of the American Philosophical Society, of which I have only the 1st volume.*

I have really not had time to prepare a paper for that Society since I wrote to you last, but will in the course of this summer if possible.

I write now in haste, but am always with much respect, Dear Sir,

Yr. very obt. servt.

J. E. Smith

My address is Hammersmith near London.

P.S. Would my Tour on the Continent, 3 vols. 8 vo. 18.[1373] *or the Linn. Soc. Trans. 2 vols. 4 to. be acceptable in exchange for the above?*

[Barton:] *Received August 18th, 1796.*[1374]

The specimens[1375] from New South Wales, Australia, were certainly those collected by John White (1750?–1832), Surgeon General to the convict colony at Port Jackson, near Sydney, from 1788–1795. On his return to England he presented specimens to James Edward Smith and was elected a member of the Linnean Society of London. Most of the plant descriptions and drawings were published by Smith as *A Specimen of the Botany of New Holland* (London, 1793–1795, 4 parts). Smith had been inspired by White's *Journal of a Voyage to New South Wales with Sixty-five Plates of non descript Animals...* (London, 1790), intending perhaps to make it more readable. A copy had been purchased by Barton and was acquired at the sale of his library by George Ord. It is now at the University of Pennsylvania.[1376]

Two copies of seven tracts bound together in library buckram are in the Linnean Society Library in London. *Memoir concerning the Rattle-snake* has "For Dr. James E. Smith from the author" on the dedication page. His note of 19 July 1801 reads "With Dr. Barton's most respectful compliments. Dr. Smith is requested to accept of one of the copies, and to present the other in Dr. Barton's name to the L. Society." He also sent his *Supplement to a Memoir concerning the Rattle-snake*; *Collections*; *Facts relative to the Opossum*; *Discourse*; *Memoir concerning the Hell-Bender*; and *Additional Facts relative to the Opossum*. Some of the later were probably in anticipation of his meeting Smith on his 1815 visit to London. James Edward Smith and John Sibthorp's *Florae Graecae Prodromus* (London, 1806), Vol. 1 only, dated "November 1809" is in Barton's library, Pennsylvania Hospital.[1377]

Dr. John Mason Good (1764–1827)[1378] spent most of his energies in historical productions, a compiler rather than an originator of ideas. Most of his medical knowledge was gained as an apprentice and through attending lectures and demonstrations at Guy's Hospital, London. After practicing some years at Sudbury he moved to London in 1793, and was elected to the College of Surgeons and to the Royal Society. In 1820 he was granted an M.D. by Aberdeen University.

1371 *Syllabus of a Course of Lectures on Botany* (London, 1795).

1372 *Plantarum Icones hactenus Ineditae* (London, 1789–1791, 3 vols.). Copy in Barton's Library, PH.

1373 Not now in Barton's library, but copy in LCP.

1374 BPL.

1375 Joan Applebaum, "Collections of John White in the Herbarium of the Academy of Natural Sciences at Philadelphia," *Taxon* 25 (1976): 331–334.

1376 White's *Journal*, edited by Alec H. Chisholm, with biographical introduction by Rex Rientis, has been published in association with the Royal Australian Historical Society (Sydney, 1962).

1377 Ewan, "Barton's library."

1378 *D.N.B.*; a verbose anonymous sketch of Good's life, stressing his literary works, appears before the Preface in Good's *Book of Nature* (New York, 1831). The three-volume edition had appeared in London in 1826.

Barton seems to have met Good on his first visit to London. In his letter of about 1809 to Lettsom, Barton acknowledged that he had received "some interesting works" from Lettsom and Good, although he did not specify the titles.[1379] Since Barton was feeling the pressures of lecturing to large classes (three-hundred pupils, he wrote), he would not be writing to Good "at all" for the present. Good was elected to the American Philosophical Society 13 January 1811.

On 10 January 1812 Barton wrote with a request that Good see his paper on the white potato [*Solanum tuberosum*] through publication:

> *Dear Sir,*
>
> *Mr. Priestley will put into your hand a paper on the subject of the Potatoe, which I wish you to take under your care, hoping that you will even be at the trouble to correct the press, should it be printed. I have no hope, that the Horticultural Society will print the paper, though I think the Transactions of that body would be the proper place for it. Perhaps, it may do for the Linnean Society, if they be about to publish soon.—My object is to have the paper printed without any unnecessary delay.—Either Tilloch or Nicholson would receive it. Of the two, I would rather it were given to Nicholson: but he often prints incorrectly. You see, therefore, that there are four bodies or persons to any one of which the memoir may be handed. I have not been able to keep a copy of the paper, and therefore, beg that you will return the original to me, putting it into the hands of Mr. Priestley, before his return to America.*
>
> *With very great respect, I remain, dear sir,*
> *Yours, &c.,*
> *B.S. Barton*
> *January 10 1812*
> *Private*
>
> *P.S. Perhaps, you may be able to prevail upon the printer of the piece to furnish you, for my friends in America, with a few copies of the printed sheets. Such things, I know, are permitted by the Royal Society.—for which I am preparing a paper, of considerable extent, on a subject of much curiosity, and even importance.—are you acquainted with Mr. Salisbury? He is a very ingenious man and excellent botanist, a member both of the Linnean and Horticulture society.—Excuse the trouble I give you.—I wish my potatoes cooked soon.—You see them in their raw state. Raw or dressed, they will not be pleasant food for some of those gentlemen, who have assumed it as a fact, quite established, that Virginia is one of the parental countries of this vegetable.*
>
> *B.S.B.*
>
> *Honoured by Mr. J. Priestley* [the younger]
> *exact copy*[1380]

Good obliged, and the article appeared in the *A Journal of Natural Philosophy, Chemistry and the Arts*. Sometime shortly thereafter Barton sent Good a manuscript on Palenque in Mexico, hoping he would also see it through publication. Since he had no response from Good, he sent a summary to Tilloch of *Philosophical Magazine* in a letter dated March 1813,[1381] but even then Barton's article seems not to have been published. On 20

1379 Barton may have received Good's *Anniversary Oration...on the general Structure and Physiology of Plants...* (London, 1808), although there is presently no copy among his books. Ewan, "Barton's library."

1380 Barton papers, APS.

1381 Barton papers, APS. The copy not in Barton's hand.

February 1813 Barton sent a manuscript on a "New Species of Proteus or Siren" based on "one good specimen" given him "by Mr. John LeConte of Georgia," hoping for publication in the Linnaean Society's *Transactions*, but we found no record of any action on the paper by Good or by the Society.

An answer to a query came on 3 April 1809 from Duncan Forbes (M.D. Edinburgh 1800),[1382] who assured Barton that it was true that he was in the process of translating Pliny's *Historia Naturalis*, and had the first four volumes almost ready for publication. He was worried about the large size of the work and its costs. He planned to issue a proposal, and hoped that Barton "whom I suppose is no stranger to the invaluable original" would subscribe, would help distribute proposals and would let him know of the probable reception across the Atlantic.[1383] This request arrived three years after Barton's unsuccessful *Proposals for Elements of Zoology*, and his other works were finding small audiences, and so, if he answered, it could not have been with encouragement. Barton did not have any Pliny, and would have coveted a good translation. Forbes seems not to have found sufficient subscribers, and we found no further reference by Barton to this work.

Richard Anthony Salisbury (né Markham) (1761–1829),[1384] born near Leeds and educated at Edinburgh, was a Fellow of the Royal Society, the Linnean Society, and Secretary of the Horticultural Society, 1805–1816. In 1800 he purchased Mill Hill, former home and garden of Peter Collinson. To Salisbury Barton wrote in 1807 that "our mountains, and especially the northern parts of the United States, are rich in the plants of Asia and Europe. As we go north or west we come to the plants, and also to many of the animals of Eastern Asia." Again, in part:

> *November 29 1809*
>
> *Sir*
>
> *I am much pleased with the only numbers that I have yet seen, of the Paradisus Londonensis and am anxious to know whether the work continues to be published under your direction. In this case, I shall certainly occasionally transmit to you some of the rarer plants of the United States, in a living state or in the state of seed, that you may have an opportunity of describing them, and of having them figured in the Paradisus. Perhaps, you may be able to inform me of some method by which such living plants may be conveyed to you, with as little expenses as possible.*[1385]

The Paradisus Londonensis (London, 1805(–1808), 2 vols.), was the combined effort of the artist William Hooker (1779–1832), who contributed 117 plates in color, and Salisbury, who contributed the text and helped finance Hooker. Barton's copy, seen at Pennsylvania Hospital in 1952, is now missing. Barton continued in his letter telling Salisbury of *Franklinia* and his *Jeffersonia*,[1386] and then announced the first volume of his "Flora of six of the American States," as in press and due to appear in May if his health and professional duties "will admit" of his attention to the correction of the press. This "Flora" did not reach the public. There is no answer among Barton's papers, nor was any more of *Paradisus* published.

Salisbury's unpopularity among contemporary botanists was real, whether or not fully deserved. James Edward Smith scribbled a jest in his copy of *Paradisus Londonensis*:

1382 His thesis, *Disputatio medica inauguralis de variola...* (Edinburgh, 1800). He is not listed in Edinburgh city directories for 1809.

1383 BPL.

1384 Desmond, *Dictionary*; Henry, *Literature before 1800* 2: 313–315; *TL-2*, *DNB*.

1385 Barton papers, APS.

1386 [*Jeffersonia diphylla* (L.) Pers., Twinleaf, IPNI. ITIS.]

What malice lurks beneath this fair disguise
Satan once more steals into Paradise.
But now how plausible soe'er this tale is
We always take his words cum grano salis.[1387]

William Roscoe (1753-1831), historian, a founder of the Liverpool Botanic Garden,[1388] had sent his *The Life of Lorenzo de' Medici, called the Magnificent* (Liverpool, 1795, 3 vols.) to the American Philosophical Society, the receipt announced 7 October 1803. He had probably been elected a member. His *The Life and Pontificate of Leo the Tenth* (Liverpool, 1806, 4 vols.) was acknowledged 19 September the same year. Barton took an opportunity to establish a new contact.

Sept. 3 1807
Sir
...Along with this note, you will receive a copy of my Elements of Botany, which I ask you to accept, as a return for the pleasure and information I have derived from the perusal of your excellent Life of Lorenzo de Medici. I also send a copy of my Discourse on Desiderata in Natural History, &c. The copy addressed to Mr. David Pennant, son of the late Thomas Pennant, I hope you will not find it difficult to forward to him, by a good and not expensive conveyance. I shall be glad to hear that you have received the articles which I send. Meanwhile I remain, Sir, with very great respect,
Your obedient servant &c.,
B. S. Barton[1389]

He may not have heard of its receipt from David Pennant, for he wrote himself a memo that on 13 June 1809 he sent a copy of his *Discourse* "& nothing else & no writing, not even my name, within." Roscoe evidently did not answer—his interests being so diverse, but distant from botany.

Bookseller Samuel Paterson

It may well have been in his capacity as a vice-president of the American Philosophical Society, and its ranking scientist, that Barton sought publications as exchanges through Samuel Paterson of Edinburgh. Paterson's first letter, in answer to some letter of Barton's, came during the troubled period among European countries, and the Embargo Act of the United States against Britain and France. He suggested new crops for the United States, included suggestions for Barton, and commented slyly on the trouble he has gone to for Barton.

Edinbr. 11 June 1808
Dear Sir
Yours of 8 Dec. by the Packet did not Come to my hand till about 6 weeks agoe—when their was No. American Ships at Greenach—the one that thus goes by will be the last or peace is finally Settled—Professor Playfair has not published a New Edition of his Hutonian System then thus—It was Not to be had in Edinb. But my Bookseller had sold a Copy to a Gentleman which he got the Loan of or he brings Down a Copy from London for him—

1387 [Translation: "With a grain of salt."]
1388 George Chandler, *William Roscoe of Liverpool* (London, 1953), no index; *DNB*.
1389 Liverpool Botanic Garden archives.

I have also Sent you Elements of Natural History 2 Vols. Edn. 1801[1390]*—This Book I did not think much of neither did my Bookseller—a Better work on this Subject I had in my own Library I think, in 3 Vols. Mr. Smelie, of Edinb.*[1391] *& sundry others assisted in Conduct.g this work—It was that Mr. whose Natural Philosophy in one Vol, the late Mr. Robt. Campbell Bookseller in Philadelphia Republished* [1392]*—As the whole Impression of this Book was printd. for a London Bookseller & sent to London whenever done & not a Copy of it to be had in Edinb.*

As from the first part of your Histy. on the Birds of Pensilvania[1393] *which I have* [,] *I Cheerfully part with the 2d No. of my Library—thus, the Hutonian System*[1394] *& the 2 Vols. of Natural History, will cost you Nothing—I am well pleased at all times to encourage, American productions of Merritt—the Vessell thus goes by Carvel from Liverpooll to Grenach to get a Cargo. Another opportunity will not offer, till Peace is fully settled. Our Government have advertised to give £60 per Ton let the price Come Never so low, for 3 years, for every Ton of Hemp, the Growth of Ireland—& if it is higher whatever the market price when delivered by the Kings Dock it will be given also 20 / 30 & 40% of a Ton More of freight according to the port it is delivered at. Your Government should encourage the Growth of Hemp in Louisiana, Carolina, &c.—Yr. Country when Peace is restored might find good sale in the European Markets for Hemp—Sugar, Coffee, & Tea—these articles of Universall Consumption might all be cultivate to good advantage in Louisiana—at least for your own Use & Consuptn—for, the encreasing quantity of Land brought into Cultivation every Year. You will find a Necessity of Introducing New Articles into Your Husbandry—An Essay or Two from Dr. Barton in Any of the Most extensive Circulating Newspaper or Magazine of the Southern States would go a great way to give a beginning to the Introduction of these Articles & other Valuable Ones into the Agriculture of the United States—& would give a Spring to the prosperity of the Freest Nation of the World—thus would more than repay Me for any little trouble or Expense I have been at on Your Account—Freedom or Liberty is such a rare thing among the Nations of the World that every Lover of Mankind is bound to Encourage the Nation where it is, I have Sent you the 2 last Farmer Magazines & Desired my friend to pay the Charges to N.York—Its directed to the* [the letter is incomplete].[1395]

Paterson wrote again:

Edinbg. 21 Nov. 1808
Respectd Friend D[ear] *Sir*

1390 *Elements of Natural History, being an Introduction to the Systema Naturae*, by Charles Stewart (London, 1801-1802, 2 vols.). Sowerby, *Linnaeus*, no. 153; Ewan, "Barton's library," no. 209.

1391 William Smellie (1740–1795) was author of *The Philosophy of Natural History* (Edinburgh and London, 1790-1799, 2 vols.). Hence Paterson's complaint.

1392 Barton himself has been suggested as author of notes added to Campbell's edition of *The Philosophy of Natural History* (Philadelphia, 1791), probably an unauthorized edition (Ewan, "Smellie," fn. p. 466). Barton was critical of Smellie's reliance on Buffon. Smellie's *Philosophy* had a number of editions over the years in the United States.

1393 Barton's *Fragments*.

1394 James Hutton, *Theory of the Earth with Proofs and Illustrations* (Edinburgh, 1795, 2 vols.), copy in LCP.

1395 Barton papers, APS.

I wrote you & sent the Books you Ordered & a Copy of my own that I thought better by old Mr. Campbell father of Mr. Saml. Campbell Bookseller in New York—as the Ship was detaind Severall Weeks owing to a dispute, I gave him Another parcel Containing Another Copy of the prints that were in the Naturale Histy of my own Copy—& A Tract on the Tea Tree—by the by Tea & Coffee are the only articles that you dont Now have attempted to Raise as Yet in the United States—They I think Might Both be Cultivate in Louisiana were Sugar is already raised I understand—I now Send you herewith Farmer Magazine[1396] *N24 & 25 N124. 138. being 2 Supplementary Nos. of the Monthly Magazine.*[1397] *Contains a review of British & Foreign Publications a Voll of Universal Magazine*[1398] *because of some Sketches of Birds in it. N. 9. 10. 11. 12. 13. 14. 15. 16 Dickson Agriculturale Mage.*[1399] *N 74. 75. 77. 78, being Reports from July to Novr. both Incluse for 1808—*

Wherein I can be of any Service to you here May freely Command
Respectd & Dr Sir
Yrs. Saml. Paterson.[1400]

A third letter:

Edinbg 17 July 1809
Dear Sir

I put up a Small parcele for you in Nov. last, but did not get a Conveyance properly till April last—It went by Diana from Clyde, (Greenach) But If the Vessell was not allowed to Land at N. York. It was to go to Quebeck—& the small Box Containing yours and Some others will probably come back with the Vessell, It Containd, Repertorys,[1401] *Dicksons Agriculturall, Farmers Mage. &c—*

I have here with Sent you the 2 last Farmers Magazines, & Lord Selkirks letter to Mr. Cartwright on a reform of the British house of Commons. Lord Selkirk got a grant of an Island or the Best part of it on the Coast of Nova Scotia—formerly—& latter a Grant of 100,000 Acres in Upper Canada he is Now turnd a Ministeriall Man, he is a Strong man, for Not yeilding in one Singular Iota to America—Our Labouring poor however felt the Benefits of returning trade with your Country—Our Government also feell it for our Revenue was beginning to Suffer—by Manufacters our Nation has been raised to the great Power it holds, & without the Sale of them abroad it Cannot go on many Years—One half of the Cotton Wooll we import is Spun into Yarn by the Mills, & in that State allowed by Governments to be exported without any Duty. For the Manufactures of Italy, Holland, France, Russia &c. and which is Generally wrought up with Linnen Warps, especially by the Germans—One Glasgow

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1396 *Farmer's Magazine* (Edinburgh 1802–1825), 23 volumes are at LCP. Barton may have been acting for the newly founded Philadelphia Society for Promoting Agriculture, for its founders, Richard Peters or James Mease.

1397 *Monthly Magazine and British Register* (London) from Feb. 1796 at LCP.

1398 *Universal Magazine of Knowledge and Pleasure* (London) with plates. June 1747–Jan. 1789. New series 5 vols. to Dec. 1805, at LCP.

1399 Not identified, but R. W. Dickson was author of *Practical Agriculture* (London, 1805, 2 vols.), which Paterson may have substituted. LCP.

1400 Barton papers, APS.

1401 *The Repertory of Arts, Manufactures, and Agriculture; consisting of original communications, specifications of patent inventions, and selections of useful practical papers from the transactions of the philosophical societies of all nations* (London, 1794–1825); with plates.

Company own very extensive Mills in Lanark, the largest in Britain—they Consume weekly 26 Ton of Wooll or 52,000 pound & 2,704,000 pound per annuum, of thus when Spun they Send immense quantities to the Continent—all Cotton Wooll. Importd in America Ships pay a Duty of 4½ d Say four pence half penny per pound And when Importd in British Ships about 2d say Two pence per pound Non of these Sums are drawn back upon its being reexported,

I am Respd Sir yrs,

Sam Paterson

[Envelope:] *Dr. Benj. S. Barton Philadelphia* [Stamped:] *New York Sep 18.*[1402]

An undated fragment concerning a cotton mill survives among Barton's papers and mentions the *London Gazette*. It ends "P.S. the States of France meet 7 Jany next which I hope will introduce freedom & liberty into France."

[1402] Barton papers, APS.

Chapter XII

Continental and Latin American Correspondents

Thunberg

Rev. Nicholas Collin may have acquainted Barton with the *Flora Japonica* (Leipzig, 1784) of Carl Peter Thunberg (1743–1828)[1403] who, while studying at Uppsala University, his M.D. 1761, came under Linnaeus's influence. While continuing his studies in Paris he received an offer to travel on a Dutch merchant ship to Japan. After a stop at the Cape of Good Hope, where he made three collecting trips into the interior, he sailed for Japan in 1775, then returned to Sweden in 1779. He became botanical demonstrator at Uppsala under Linnaeus junior, then in 1784 Professor of Botany in the Faculty of Medicine.

Barton had been thrilled to find that many species in Japan had similar species in eastern North America. The young Italian traveler, Luigi Castiglioni, visiting in Philadelphia while Barton was still in Europe, had also been made aware of the similarity of species in the two areas. Barton introduced himself to the Swedish botanist acknowledging the usefulness of his *Flora*, and enthusiastically detailing his plans for his own flora, plans stillborn:

> *Philadelphia, November 4, 1790*
>
> *Sir,*
>
> *Although I have not the honour, and the happiness, of being personally acquainted with you, yet the reputation to which you have arrived among the learned of Europe, and the greatness of your exertions for the advancement of Natural Knowledge have been long known to me. Your Flora Japonica has contributed, not a little, to my Botanical information, and from your Iter Japonicum I expect still more. May I take the liberty to inquire when we may expect that work?—And may I hope you will pardon the liberty which I am taking, in addressing this letter to you?*
>
> *I have been for some time, engaged in collecting materials for a Flora of the United States. A Prospectus of this work I hope to be able to give to the publisher sometime in the course of the next summer. Meanwhile, I shall take the liberty of giving you some general idea of the work.—If I meet with encouragement, I hope to be able to publish the first Fasciculus by the end of the year 1793. Each Fasciculus of the work is to contain the history of fifty vegetables.—I am unable to determine, with certainty, the exact number of Fasciculi of which this Flora will consist. This, as you may readily imagine, is not an easy matter, more especially as the plants of this country have, hitherto, been so imperfectly investigated. My design is to publish this work on an extensive scale. I aim at a philosophical history of*

1403 *TL-2*, biographical account and list of Thunberg's publications. No letters from Barton are listed; he was not considered a "Main correspondent"; Krok, *Biblioth. Bot. Suecana*, 705–716; Gunnar Eriksson in *DSB*.

the vegetables of that great range of country which is the object of my Flora. The work will be illustrated by plates, which I intend to have engraven, and coloured by some of the first artists in Europe. At present, it is my opinion, that it will be unnecessary to publish engravings of every vegetable indiginous to the United-States. You, Sir, Professor Pallas, and several other botanists, seem to have thought it improper to be continually multiplying plates of common, or well known plants.—At least, I have drawn this conclusion from your Flora Japonica, from the Flora Rossica,[1404] *&c. &c.,—In a work so extensive as that which I meditate, many new plants will, necessarily, make their appearance.—Thus some of the Forest Trees, and Shrubs, even in the well cultivated parts of this state, are actually new species.—Others are imperfectly described, and of others, again, we have no representations, or at least, very bad ones. I also, find that my Flora will necessarily embrace...*

And here Barton exhibits his interest in a comparison of species common to both New and Old Worlds, the quotation given in our Chapter XIV on Biogeography:

If my time would permit, it would afford me pleasure to give you an abridged view of my Prospectus; but I hope to be able to transmit a copy of it, complete; sometime in the month of July, next.

If in the meanwhile, you will honour me with a few lines, and will suggest some hints with regard to the work of which I have been speaking, I shall deem myself greatly indebted to you.—I shall, likewise, think myself happy, if you will inform me in what manner I may render you any services.—My learned, and good friend Dr. Nicholas Collins, who lives among us, beloved by all those who know him, will inform you of the best means of conveying letters to this country.

I am, with the highest regard for your character, and extensive learning,—Sir—Your very humble Servant, &c. &c.

Benjamin Smith Barton [with great flourish]

To Dr. C. P. Thunberg, Professor of Medicine and Botany, in the University of Upsal.[1405]

Thunberg was elected a member of the American Philosophical Society 15 April 1791, Jefferson presiding, and no doubt Collin and Barton were among the other ten members attending.[1406] In his next letter Barton wrote Thunberg that he was still planning his *Flora*, but he bemoaned his lack of leisure for such a work. He had received the inaugural theses,[1407] and Part One of Thunberg's *Prodromus Plantarum Capensium* (Uppsala, 1794).[1408] They remain with his library. Collin had informed him that this was not an opportune time for dispatching specimens and some of his own publications. Napoleon was being a disruptive force, one reason for the delay before his next letter.

Philadelphia, September 5, 1796

Dear Sir,

I acknowledge, with many thanks, the receipt of a number of inaugural

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1404 Pallas was author of *Flora Rossica* (Leipzig, 1784–1788, 2 vols.). *TL-2*; Pritzel, *Thesaurus*.

1405 University of Uppsala.

1406 APS, "Minutes," 193.

1407 Eight dissertations of Thunberg's pupils are in Barton's library, PH. Ewan, "Barton's Library."

1408 "Received pt. 1, 5 Sept. 1796" and "From the author to Benjamin Smith Barton," inscribed in copy, PH. Ewan, "Barton's Library."

dissertations, and also of your Prodromus Plantarum Capensium, pars prima, for which I am extremely obliged to you. In return, I shall send to you, in a short time, some specimens of our plants, and also a couple of memoirs by myself. At present, our friend D. Collin tells me it will not be convenient to have them forwarded.

I long to see the remainder of your excellent Prodromus. In itself, it is very valuable; and I doubt not that the work of which it is the prospectus, will be a performance of the first magnitude, in point of merit.

The more I see of our plants, the more I am persuaded that an extensive work concerning them ought to be published. But for this purpose, time and leisure are requisite. I have not dropped my design of giving to the world a work of this kind. I am every day engaged in making collections.

It will give me much pleasure to hear from you, and of your wealfare. But I wish you would let me know in what manner I can be of service to you.

I am, with great respect, Dear Sir, Your humble Servant, &c.

Benjamin Smith Barton

P.S. I have lately discovered a beautiful new species of Arethusa. It may be called Arethusa verticulata, or A. medeoloides.[1409] *I have also discovered a new species of Dipus, or Jerboa, which I call Dipus Americanus. An account of this little animal is printed off for the 4th vol. of the Transactions of our Philosophical Society, now in the press. It is certain that many of the quadrupeds of our country have not yet been described. I have also discovered a new species of Siren.*

B.S.B.[1410]

We found no letters from Thunberg among Barton's papers at the American Philosophical Society.

Sparrman

Collin may have been helpful in proposing a correspondence and exchanges with Anders Sparrman (1748–1820), pupil of Linnaeus and curator of natural history at the Swedish Academy of Science at Stockholm.[1411] He had been elected 15 January 1790 to the American Philosophical Society at the same meeting with Dr. John Walker, Professor of Natural History at the University of Edinburgh. Sparrman had visited China, then joined Cook's Second Voyage at Capetown, and had taken a rich collection of artifacts, plant and animal specimens from the Sandwich (Hawaiian) Islands for the Swedish Royal Academy. Sparrman wrote in answer to a letter from Barton, in which Barton referred to the "Flora" upon which he was working:

May 18, 1791

Sir!

Having been favored by yours Sir of Philadelphia Novb. the 4th past year I think myself very much flattered by the fellowship of the American Philosophical Society & shall find myself still more happy on recieving their diploma for which I will not fail them with the first opportunity to

---

1409 [Referred later to *Pogonia verticillata* Nutt., *Gen. Am.* ii. 192. 1818. IPNI.]

1410 University of Uppsala. [*Dipus americanus* is now known as *Zapus hudsonius* or Meadow Jumping Mouse.]

1411 *TL-2*; Krok, *Biblioth. Bot. Suecana*, 662.

return my due thanks & respects begging in the meantime to do this in the best manner possible on my account, and to inform me of the titles & address for instance if there be anny praesident to it appart in the address to be mentioned &c in order that I may not any way commit mistakes. With the greatest satisfaction in the world we here received the news of your litterary undertakings Sir & will be rejoiced to si them once performed, firmly persuaded of the utility of the task & the perfection of it from your able hands therefor immediately I got 8 subscribers here in the academick meeting, of which Mr. Collyn[1412] *will give you the list tho in general we here are avers of the subscribing way.*

Your flora especially will do immortal honnor to your Country & to Yourself Sir & I hope you will meet with due success & encouragements. We will if you please exchange our Botanical and zoological works, of Musaeum Carlsonianum four Volumes have already appeared [1413] *perhaps Yourself or Your Society also should wish to possess the Memoirs sur les insects by our Baron Degeer 7 large tomes in 4to*[1414] *this also serving to the History of Most American insects without doubts. In favoring me with the dipploma & transactions of Your Society perhaps it might be transmitted to Dr. Dryander secretary of the famous Sir Joseph Banks & Librarian to the Royal Society in London, or rather direct to Sir Joseph himself to forward for me. However if you send me any insects & especially stuffed Birds which you mention it would be better to send them by the way of the Swedish General Consul Grl. at London or direct on Stockholm if there be any vessel bound thither from Philadelphia or if bound to the Balthique only the address might be to Mr. Gloerfeld Swedish General Consul at Helsingoer because all ships bound to the Balthics touch there. Please do tell what kind of Collections by preference you might wish from hence, and we will reckon it a pleasure & duty to serve you. Indeed Sir I am infinitely obliged to my friend Mr. Collin in procuring me the honour of your acquaintance & wish you would tell him that also on my part.*

Once more Sir I beg you forward my best compliments to your Society & due respects & be persuaded that it is with great estime I will continue Sir Your very humble Servent &c &c

Andreas Sparrman

[Barton:] *Received May 26th 1792 answered.*[1415]

[Addressed:] *To Dr. Benjamin Smith Barton of the American Philos. Society at Philadelphia.*

On 2 May 1804 Collin sent a note (within Philadelphia) to Barton concerning books he was sending to Sweden for him:

Dear Sir

I have a pretty certain opportunity by way of Amsterdam with a worthy Swedish Captain, who is settled here. I send now to Sw[edish] *Roy*[al] *Acad. whose residence is in Stockholm, Your Elements of Botany, and your two parts of Ma*[teria] *Med*[ica] *Am*[ericanum]. *Besides the*

1412 Rev. Nicholas Collin.

1413 The four parts in one volume of Sparrman, *Musaeum Carlsonianum* (Stockholm, 1786-1789) are in Barton's library, PhP, though without his usual signature.

1414 Evidently not purchased was Charles De Geer, *Mémoires pour servir à d'histoire des insectes* (Stockholm, 1752-1778, 7 vols.), with 238 copper plates.

1415 Barton papers, APS.

> *consideration of their intrinisic value, my motive is to make you fully known to that Illustrious Body, which is one of the first Scien*[tific] *Societies in Europe. They already got your New Views etc. and your Mem. on the Goitre. which you sent in May 1801 under my care, as a present from Yourself: and notice of which being safely arrived is come to me, by S. Sparrman. If you will send any thing else, make it ready. Your are known to them by me as one of the first literary characters here.*
>
> *N. Collin*[1416]

Collin then sent enclosed for Barton an "Extract of my letter to the Royal Sw[edish] Acad. at Stockhom, dat. 3 May 1804":

> *Dr. Barton is one of the most learned men in America, and the principal cultivator of Natural History in these States. He is also the best acquainted with the Antiquities and languages of the Indians in North america. His first Essay, called New Views I presented to the Acad. 3 years ago. He proposes soon to publish a second piece, and to continue the subject for years, or for life. The subject is of great importance in the history of mankind, and of great extent, because these languages are kindred with the greatest part of all the languages known. If the Academy would by membership distinguish his deserts, it would animate the few, yet encreasing votaries of Science in this young country.*[1417]

It was not until 8 October 1814, when Barton was preparing for his trip to Europe, that the certificate had been signed. Collin, however, in a letter to Barton 8 February 1814 refers to Barton's already having been elected.

Herholdt

To John Herholdt (1764–1836) Danish physician and medical writer in Copenhagen,[1418] Barton sent a memorandum dated 27 March 1808 that he was sending two copies of his paper *Facts Relative to the Opossum*, two of *Discourse*, and one copy of his *Proposals for Elements of Zoology*. His letter was "honoured by a Mr. Heybeg," who also received copies.

Fabricius

Professor Johann Christian Fabricius (1743–1807)[1419] at the University of Kiel had been a pupil of Linnaeus at the same time as Adam Kuhn and Thunberg. He may possibly have met Barton during Barton's student days abroad, since altogether he made seven trips to England. He had first visited Edinburgh in 1767, then in November arrived in London when he met Banks, Solander, and Hunter, remaining until December 1768, before going on to Paris. "Fabricius," wrote Dru Drury of one of his visits to London is "making descriptions from Mr. Banks! and my collections...a pleasure he seems to enjoy with as much glee as a Lover of Wine does ye sight of his Cellar which well stored with full Casks and Bottles, enjoying by anticipation ye pleasure he is to receive in emptying them."[1420] On Fabricius's death Barton

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1416 Barton papers, APS.

1417 Barton papers, APS.

1418 *Nouvelle Biographie Universelle*, not seen.

1419 Bengt-Olaf Landin in *DSB*; Swainson, *Taxonomy*, 179; N. Nelson Papavero, *Essays on the History of Neotropical Dipterology with special Reference to the Collectors* (São Paulo, 1971–1973, 2 vols.) 1: 24–31. Fabricius's letters to Banks from Kiel, 1776–1805, are noticed in Dawson, *Banks Letters*.

1420 *Sci. Monthly* 14 (1922): 80. Angus Armitage reported on this visit in *Ann. Sci.* (London) 14 (1958): 116–123.

wrote in 1808 warmly of his correspondence "from time to time," since 1793 with "the great entomologist" who was "no mere nomenclatural naturalist," but "attached himself to the philosophical part of the science."[1421]

Among Barton's papers is his "List of dried plants," about fifty, with some crossed out, the "few dried specimens" referred to in the following letter:

> *20 Dec. 1795*
>
> *Dear Sir,*
>
> *Your letter, dated Kiel October 10, 1794, did not come to my hands before the 30th of July of the present year. I should have answered it immediately, had I not been prevented by very urgent business.*
>
> *I am extremely indebted to you for excellent Entomologia Systematica,*[1422] *which I esteem one of the most valuable works in my library. I sincerely wish that it were in my power to send you something, in return. At present, I can do no more than to assure you, that I shall persevere in my scheme of collecting for you our insects; and that those works which I esteem most worthy of your notice shall be sent to you. In the meantime, please to accept of the third volume of the Transactions of our Philosophical Society, and of a few dried specimens of plants. If you are desirous of receiving more of our plants, in the same way, they shall be sent to you. I shall be glad to have your opinion concerning those of the plants which I have marked thus * *...I shall write to you again, in a short time, Meanwhile, believe me to be, with great respect,*
>
> *Dear Sir,*
>
> *Your obedient servant & friend, &c.*
>
> *Benjamin Smith Barton.*
>
> *P.S. You will oblige me by informing me what is the price of the Flora Danica*[1423] *complete. Will it be possible to obtain a copy of the work, from the editors, in exchange for American publications, of the same pecuniary value?*
>
> *B.S.B.*
>
> *Exact copy*[1424]

The starred plants referred to "Cyperus (an nova species)" and "Asclepius decumbens." Barton published only a part of a letter he received from Fabricius in 1805 under "Miscellaneous Facts and Observations" in his *Philadelphia Medical and Physical Journal.*[1425] Besides news of "our University" and the mention of "young Mr. Weber and Mr. Mohr" as visitors, Fabricius mentioned the books he was sending to Barton: *Systema Rhyngotorum* (Braunschweig, 1803); *Systema Piezatorum* (Braunschweig, 1804), inscribed "From the author," and *Resultate natur-historischer Vorlesgungen*, (Kiel, 1804). The first two books are in Barton's library at Pennsylvania Hospital, the last is missing. Fabricius also sent bird specimens in 1805.

Fabricius in *Resultate*, 267–268, refuted toad-charming, but he had erroneously concluded that Barton agreed with Kalm on snake-charming. This roused Barton to reply in a

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1421 *PMPJ* 3 (1808) pt. 1: 187–189. Barton, extracted from his correspondence, but the letters were not returned by the printer; not in Barton papers.

1422 *Entomologia Systematica emendata...* (Copenhagen, 1792–1794, 4 vols.). Vols. 2, 3, and 4 are at PH.

1423 Georg Christian [von Oldenberg] Oeder (1728–1791), German physician and botanist, professor of botany at Copenhagen; sometimes in Norway, [*Flora Danica*], *Icones Plantarum sponte Nascentium in Regnis Daniae et Norvegiae...* (Copenhagen ([1761–] 1764–1883, 51 fascicles in 17 vols.), of which Barton obtained 9 vols., 1770–1813. Ewan, "Barton's Library."

1424 Copy at HSP; xerox copy, Barton papers, APS.

1425 *PMPJ* 2 (1805) Pt. I: 192–193. [*Asclepias decumbens* L. IPNI.]

letter he published in his *Journal* that "anyone who has perused" his two articles will see that he has "satisfactorily shown" that there is no "solid foundation" for "the vulgar opinion."[1426]

When Fabricius published his *Supplementum Entomologica Systematica* (1798), he included *Antacus bartonii* [*Cambarus bartonii* Fabricius] on page 407, the first species of crayfish described from North America. He gave its distribution only as "Habitat in America boreali," but said it was received from "Prof. Smith Barton." Walter Faxon in his monograph gave the distribution of crayfishes as living in "cooler waters" with the center of distribution the mountains draining into the Susquehanna and Delaware river systems. Barton's specimen(s) could well have been collected in eastern Pennsylvania, perhaps from a likely haunt, the Schuylkill River. Had there been an authentic specimen in the Philadelphia Academy collection, the loan of the Academy's early types to William Stimson meant its loss in the great Chicago fire.[1427]

Barton published a warm tribute on Fabricius's death, but he carefully informed his readers that:

> *His later writings, no doubt, contain descriptions of many North-American insects, specimens...transmitted to him, from time to time, by the Editor of this Journal, who enjoyed the happiness of corresponding with the great entomologist, ever since the year 1793; and who now deplores the loss, not merely of the naturalist, but also of his useful epistolary friend...Fabricius was, by no means, a mere nomenclatural naturalist. He had attached himself to the philosophical part of the science also...influenced by the truest spirit of observation...Dr. Johnson says, 'the chief glory of every people arises from its authors.'*[1428]

Olaf Swartz

Olaf Peter Swartz (1760–1818)[1429] was another medical graduate from the University of Uppsala, a pupil of Linnaeus junior, author of e.g., *Methodus Muscorum Illustrata* (Uppsala, 1781). He had already botanized widely in Sweden and Finland when he set out for America in 1783. He arrived in Philadelphia 5 August, and on 3 October visited Boston, Charlestown, and Harvard College, collecting in these areas, probably with Cutler in Massachusetts. On 3 January 1784 he arrived in Montego Bay after visiting Cuba, Puerto Rico, and Haiti. In 1787 after a visit in London he arrived in Stockholm and produced his *Flora Indiae Occidentalis* (Erlangen, 1797–1806, 3 vols.). He became professor and director of the Hortus Bergianus in 1791, and in 1806 was appointed curator of natural history in the Academy of Science, the year in which he was also elected a member of the American Philosophical Society. He also served as Professor of Botany and Natural History at the Stockholm College of Surgeons, in 1811 becoming its secretary. Barton sent to Swartz a number of specimens from the northeastern United States, some of which he wished identified. He requested the prompt return of certain ones since duplicates would be difficult for him to obtain. Barton wrote in his letter of 29 July 1805:

> *Dear Sir, I do myself the pleasure to transmit to you a copy of my Collections, which I beg you to accept. Please to present the other copy,*

1426 *PMPJ* 2 (1805) Pt. I: 165–166.

1427 *Mem. Comp. Zool.* 10 (4) (1805): 62.

1428 *PMPJ* 3 (1808) Pt. I: 187–189.

1429 *TL-2*; Pritzel; Gunar Eriksson in *DSB*; Sten Lindroth, *Kung. Svenska Vetenskapsakademiens Historia 1739–1818* (Stockholm, 1967), passim; Robert F. Fries, *A Short History of Botany in Sweden* (Uppsala, 1950); Krok, *Biblioth. Bot. Suecana*, 677–683; Merle A. Reinikka, *A History of the Orchid* (Coral Gables, Fla., 1972), [127]–129, portr.

> *from me, to my friend Mr. Hermann. I possess a collection of dried plants from the West Indies, I think about 250 speciments. They were given me by the late Mr. Julius Van Rohr, and were principally collected in the island of St. Croix. If you think they might be useful to you, let me know, and I will put them up, safely, to be forwarded by the Swedish Consul here. I think there are some new or rare species among the number. Van Rohr was a good botanist. It is not probable that I shall ever publish anything concerning the plants of any other country than those of the U. States. and what relates to the West Indies seems, of right, to belong to you...*[1430]

Now that he was editing *Philadelphia Medical and Physical Journal* he sought Swartz's cooperation:

> *As I am engaged in a periodical publication, relative to all the branches of medicine and Natural History, you can be of much service to the work, particularly by transmitting to me an annual, or semiannual, notice of the principal new publications, or of the principal new Discoveries, in the sciences.*

Always anxious to build his library Barton continued:

> *I am very anxious to possess Bergius's work on the Materia Medica.*[1431] *I have not been able to procure it in the U. States, or in Britain. If you will forward to me a copy of it, and also a copy of the last edition of the Swedish Pharmacopaeia,*[1432] *I will send something, equally valuable in return. I shall be glad to know if any of your printers would take some copies of my Prodromus,*[1433] *in exchange for other Pubs, such as relate to natural history and medicine: and what number of copies they are willing to take. I would exchange for your Flora Ind. Occident.*[1434] *for Flora Japonica,*[1435] *for Acharii, Lichenographia,*[1436] *Linnaeia Fl. Suecica,*[1437] *Linn. Fauna Suecica, &c.*[1438] *Write to me on this subject, and command my services.–I am truly sorry that you never received my letter in answer to yours, accompanying the specimens of plants.*[1439]

Then again, according to a memo he wrote for himself:

1430 Royal Academy, Stockholm.

1431 Peter Jonas Bergius (1730–1790), Swedish naturalist and physician, pupil of Linnaeus, professor of natural history and pharmacy at the Collegium Medicum in Stockholm (1766–1790); Barton refers to Bergius, *Materia Medica e Regno Vegetabili...* (Stockholm, 1778, 2 vols.). *TL-2*; Pritzel, *Thesaurus*; Krok, *Biblioth. Bot. Suecana*, 75–77.

1432 Is this a preliminary morsel? Christian Amatheus Seydler, *Analecta Pharmacognostica* (Halle, 1815). Pritzel, *Thesaurus*.

1433 Barton's *Prodromus Florae Pennsylvaniae*, only a few sheets were printed. See our Chapter XVI.

1434 Olaf Swartz, *Flora Indiae Occidentalis* (Erlangen, 1797–1806, 3 vols.). Not in Barton's library, but a copy at the ANSP.

1435 Carl Peter Thunberg, *Flora Japonica...* (Leipzig, 1784). Thunberg had sent Barton his *Icones Plantarum Japonicum* (Uppsala, 1794–1805, 5 parts), in 1797; now Barton would like the *Flora*. *TL-2*.

1436 Erik Acharius (1757–1819), Swedish lichenologist, physician, pupil of Linnaeus; his *Lichenographia Universalis...* (Gottingen, 1810) referred to by Barton. *TL-2*; Krok, *Biblioth. Bot. Suecana*, 2–4. Ewan, "Barton's Library."

1437 Linnaeus, *Flora Suecica*, ed. 2 (Stockholm, 1755), "Received Nov. 13, 1812 BSB," PH; from Swartz? *TL-2*.

1438 Linnaeus, *Fauna Suecia...* ed. 2 (Stockholm, 1755). Barton was presented with the copy J. Aurelius had given to Wm. Bartram, who had given it to Barton 18 February 1794. PH. *TL-2*.

1439 Copy, Barton papers, APS.

Presented to the Royal Swedish Academy of Sciences, by the author. June 27th 1809. BSB. Along with this [unspecified] *I sent a copy of the paper on the Siren,*[1440] *with explanation: and put it into the hands of Dr. N. Collin, June 27th 1809.*

Swartz's acknowledgement explained why he had not responded earlier, but he included a report on the progress of science in Europe:

Stockholm, 20 May 1811

Dear Sir

An Opportunity just offering affords me the pleasure of writing a few lines to You in order to remind You of an Obliged friend.

The ilfated state of my Country, even in respect to the intercepted communication with the rest of the world during some years past, has made every scientifical pursuit very precarious. The prospect however being actually something more favorable, we have some hope to regain our strength both in moral and physical respect.

The dried specimens of plants, which You had the goodness to send me in 1803 and which you desired to have returned, You'll find inclosed. viz.

1. *The 12 Seaplants—of which the 3 last appear not be described.*
26. *Is the Neottia pubescens*[1441] *Willd. sp. pl. 4. 76-n. 12.*
31. *is an Orchidea, unknown to me—the flower was also wanting.*
32. *is certainly Calla palustris L.* [Water Arum] *I send You a Specimen at hand—belonging to the Swedish flora.*
34. *Arethusa ophioglossoides*[1442]
35. *Cymbidium pulchellum.*
36. *Polypod[ium] incanum mihi (ceteracimum Michx.) Acrost*[ichum] *polypod[ioides] L.*[1443]

Your prodromus of the flora of the Sates of New Yersey[1444] *etc etc I long to see very much. If you should find an opportunity, I request Your bounty to send the same to me—(in case of some Vessel bound to Gottenburg) under or to direction to the Secretary Mr Cranchell at Gottenburg.*

A new edition of our Phamacopaea is just preparing which I shall forward to You in due time. Acharius' Lichenographia universalis[1445] *was published—last year in Germany at Gottingen. I have not been able myself to get it to this moment so the sending it was taken away; in the passage by pirates. It is a large work in 4 volumes. The prize* [price] *about 5 £ for the copy.*

The illustrious v. Schreber[1446] *dies last year in Dec. at Erlangen; and Mr. J. Dryander,*[1447] *the friend of Sir Jos. Banks, in Sept. last at London. By this I have lost two excellent friends!*

1440 *Account of Siren lacertina.*

1441 [*Goodyera pubescens* (Willd.) R. Br., the Downy Rattlesnake Plaintain. ITIS. TROPICOS.]

1442 [Referred to *Pogonia ophioglossoides* (L.) Ker Gawl., Snakemouth Orchid. IPNI. ITIS.]

1443 [Resurrection Fern is known as *Pleopeltis polypodioides* (L.) E. G. Andrews & Windham, formerly *Polypodium polypodioides* (L.) Watt. IPNI. ITIS.]

1444 Barton's projected "Prodromus of a Flora" varied from time to time for the area to be covered.

1445 Acharius, *Methodus qua omnes detectios Lichenes* (Stockholm, 1803) is in Barton's library, PH, not the newer work he hoped to obtain.

1446 Johann Christian Daniel Schreber (1739-1810) was the author of *Beschreibung der Gräser* ([1766-] 1769-1810, 2 vols.), which Barton acquired in August 1807. PH. *TL-2*; Ewan, "Barton's Library."

Natural History has made gigantic progress in Europe of late years, notwithstanding the Warings of Bellona.[1448] *You are certainly informed about the admirable productions in France of Humbldt & Bonpland,*[1449] *of the deceased Mr. Ventenat*[1450] *–of Turpin*[1451] *–Aubert du Petit Thouars,*[1452] *Labillardiere,*[1453] *Peron,*[1454] *Palisot Beauvois*[1455] *etc. in England of Turner's excellent history of the Fuci*[1456] *–Dillwyns Conferva*[1457] *–Smith's (Sibthorpe) flora Graecae–ejusd. Exotic & English Botany*[1458] *–Brown's Prodromus Flora Nova Hollandia (comprising several 1000 new species, perfectly well arranged)*[1459] *–Rudge plant Guianans.*[1460] *–in Germany of Hoffmansegg's magnificent flora Lusitanica*[1461] *(more than a pendant to Jardin de Malmason of Venenat). The hortuses of Willdenow*[1462] *and Schröder;*[1463] *Flugge, monographies of grasses*[1464] *–Pallas on Pedicularides–Salsola &*

1447 Jonas Dryander (1748–1810), born in Sweden, compiler of the catalog of Banks's library. See Dryander, *Banks' Catalogus.*

1448 "Bellona," name of a ship. Referred to in Dawson, *Banks Letters*, "30 June 1798," 295.

1449 Humboldt and Bonpland visited Barton in Philadelphia in 1804.

1450 Etienne Pierre Ventenat (1757–1808), author of *Tableau du Règne Végétal selon la Méthode de Jussieu* (Paris, 1794, 4 vols.), a copy of which is in Barton's library, PH. *TL-2.*

1451 Pierre Jean François Turpin (1775–1840), French artist and naturalist who painted a few illustrations for Barton. *TL-2.* [Figure 78, *Echinops* floret; Figures 77-84.]

1452 Louis Marie Aubert DuPetit-Thouars (1758–1831), French traveller and botanist, author of *Genera nova Madagascariensia* (Paris, 1806). *TL-2*; Pritzel.

1453 Jacques Julien de Labillardière (1755–1834), French traveller and naturalist. He had been sent in 1791 in search of La Perouse, who had been voyaging around the world, his report (Paris, 1811). Copy LCP. *TL-2.*

1454 François Peron (1755–1810), anthropologist, zoologist on an expedition to Australia, accompanied by Charles Alexander Lesueur, who later visited the United States. Peron was author of *Voyage de Decouvertes aux Terre Australe...1800–1804* (Paris, 1807–1816); translation (London, 1809). Copy LCP. Musgrave, *Entom.*, 254–255; Bernard Smith, *European Vision and the South Pacific, 1768–1850* (Oxford, 1960), 146–147, and passim.

1455 Palisot de Beavois, short time assistant to Peale, 1791–1798, made *Vespa* drawing for Barton. His career and publications cited in *TL-2.*

1456 Dawson Turner (1775–1858), British banker and botanist. The work referred to is *Fuci sive Plantarum Fucorum Generis...et historia* (London 1807–1819, 4 vols.), the first three volumes issued in fascicles by 1811. *TL-2.*

1457 Lewis Weston Dillwyn (1778–1855), British porcelain manufacturer and naturalist; author of *British Confervae* (London, [1802–]1809, 8 fascicles), with colored plates. Copy LCP. *TL-2.*

1458 James Edward Smith (1759–1828), British botanist; studied medicine at Edinburgh, his M.D. from Leiden, purchased the Linnaean herbarium in 1784, and established the Linnean Society in 1788. He was co-author with John Sibtorp of *Florae Graecae Prodromus...*, only two volumes of which were published in Barton's lifetime (London 1806–1813), Smith writing most of the text. Volume one is in Barton's library, PH. *Flora brittanica...* (London, 1800–1804, 3 vols.) is in Barton's library, PH. Swartz also refers to *English Botany...* (London, 1790–1814, 36 vols.). *TL-2.* John Sibthorp (1758–1796), British botanist, his M.A. and M.D. from Oxford, where, after study on the continent, he became Director of the Oxford Botanic Garden.

1459 Robert Brown (1773–1838), British botanist, travelled to Australia with Flinders; librarian to Banks and the Linnean Society; Keeper of botany at the British Museum; author of *Prodromus Florae Novae Hollandiae...* (London, 1810). *TL-2.*

1460 Edward Rudge (1763–1846), British botanist and antiquary who obtained a collection of Guyana plants. Author of *Plantarum Guianae rariorum icones et descriptiones...* (London, 1805–[1806]). *TL-2.*

1461 Graf von Johann Centurius Hoffmannsegg (1766–1849), German botanist, entomologist, and ornithologist, traveler, in Portugal 1797–1801; co-author with Heinrich Friedrich Link (1767–1851) of *Florae Portugaise* (Berlin, 1809 [–1840], 2 vols.). *TL-2*; Gilbert, *Entomologists.*

1462 Carl Ludwig Willdenow (1765–1812), German botanist, Professor in Berlin University; editor of *Species plantarum*, ed. 4 (Berlin, 1797–1825, 6 vols.), which was completed by Friedrich Schwägrichen and Johann Heinrich Friedrich Link; an editor of *Philosophica Botanica*, ed. 3 (Berlin, 1790); and *Enumeratio Plantarum Horti Regnii botanici Berolinensis* (Berlin, 1809), for examples. *TL-2.*

1463 Schröder, not identified. Perhaps Heinrich Adolph Schrader (1767–1806), German botanist, M.D. Göttingen, 1795, and Professor of Botany there, was meant. *TL-2.* Or Johann Christian Daniel von Schreber (1739–1810), German botanist who took his M.D. with Linnaeus. *TL-2.*

1464 Johannes Flüggé (1775–1816), German botanist and physician at Hamburg; author of *Graminum Monographiae...*Pars I. *Paspalum. Reimaria* (Hamburg, 1810). *TL-2.*

Astragali.[1465]*—Willdenow has published that part of his spec. pl. which contains filices—and is now preparing the Text, as well as a new edition of Systema Vegetabilum.*[1466] *Rudolphi has given a Historia Entoozorum s. ver intestinal—a work of great merit*[1467]*—The Flora Danica Continues as usual, and Amounts to 24 fasiculi. In Sweden 2 national works have made their appearance.—The Svedish Botany and Zoology.*[1468] *The former makes at present 70 numbers and the latter 9. Both are forwarded by me—Acharius has done with his Lichenographiae.*[1469] *Gyllenhal, one of the first entomologists of the present time—3 voll. of Insecta Svecica.*[1470] *Schonherr 2 vols. of a Synonymia Insectorum*[1471]*—Paykull a fine monography, of the genus Hister (upward of 100 species!)*[1472] *Westring an analytical work on Lichens, particularly for dy*[e]*ing. i vol.*[1473] *etc. etc. etc.—*

Your correspondence extended to this Corner of the Ancient World would be a flattering mark of favor, which I shall acknowledge in the sincerest manner, and in case of any letters in the future, please to direct them to the Royal Academy of Sciences at Stockholm whose Secretary I am.

With great respect I remain unfeignedly Dear Sir
Your affectionate friend and very humble Servant
Olaf Swartz.[1474]
[B.S.B.:]*Received Sepr. 3. 1811*

Swartz may possibly have met Barton in 1783, the young pupil of York Academy visiting relatives in Philadelphia in the summer of 1783, or Swartz travelling through York. He may have met Barton in London in 1787 while that pupil from Edinburgh was in the city pushing publication of papers and visiting naturalists. Swartz's signing his letter so familiarly suggests not only missing letters, but also personal meeting.

Zimmermann

In 1793 the American Philosophical Society received a copy of *Specimen Zoologie Geographiae* by Eberhard August Wilhelm von Zimmermann (1743–1815),[1475] Professor of

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1465 Peter Simon Pallas (1741–1811), German botanist and geographer, M.D. Leiden 1759; explorer of northern Russia and Siberia. His "Pedicularides" not located. *Species Astragalorum...* (Leipzig 1800–[1803], 13 parts); *Illustrationes plantarum imperfecta vel nondum cognitarum...* (Leipzig 1803–[1806], in parts), which lists 21 species of *Salsola* [Russian Thistle, or Tumbleweed]. *TL-2.*

1466 Willdenow's edition of *Species Plantarum* (Berlin, 1797–1825, 7 vols.) of Linnaeus, was not completed. See [Soulsby], *Linnaeus*, no. 526. *TL-2.*

1467 [Israel] Karl Asmund Rudolph (1771–1832), Swedish naturalist and physician. Morton, *Medical Bibliography*, no. 2449.

1468 *Svensk Zoologi* (Stockholm, 1806–1809), part of the text written by Swartz. See Wood, *Vert. Zool. Svensk Botanik* (Stockhom, 1802–1838), Swartz one of a number of contributors. See Pritzel, *Thesaurus*, no. 10707. Neither appear today in Barton's library.

1469 See fn. 33.

1470 Leonard Gyllenhal (1752–1840), Swedish entomologist, pupil of Linnaeus at University of Uppsala, which received his collections. From 1799 he worked with Paykull. Gilbert, *Entomologists*; Essig, *Entomology*, 642, and passim.

1471 Carl Johann Schonherr (1772–1848), entomologist, his collection in the Riksmuseum, Stockholm. Gilbert *Entomologists*; Essig, *Entomology*, passim.

1472 Gustaf von Paykull (1757–1826), Swedish entomologist, author of *Fauna Svecia*; *Insecta* (Uppsala, 1798–1800, 3 vols. in 2), Gilbert, *Entomologists*; Essig, *Entomology*, passim.

1473 Johan Peter Westring (1753–1833) M.D. Uppsala 1780, his *Svenka Lafvarnas Färghistoria* (Stockholm, 1805–[1809]), the purchase ordered by the APS 16 October 1813 through Collin. Krok, *Biblioth. Bot. Suecana*, 757–758. *TL-2.*

1474 Barton papers, APS.

Mathematics, Philosophy, and Natural History at Caroline College, Brunswick. On 18 April 1794 he was elected a member of the Society.[1476] Through oversight, however, the certificate of membership remained buried among Barton's papers. Pennant had referred to Zimmermann's work in his *History of Quadrupeds*, and Barton may first have learned of it there.[1477] Barton had introduced himself to Zimmermann in the following letter, which details his progress and ambitions, and works by contemporaries:

29 August 1793

Sir,

I am an entire stranger to you; but I feel a strong desire of cultivating an acquaintance with you. I am not unacquainted with several of those valuable publications with which you have long entertained, and instructed the literary world. Your Specimen Zoologae Geographicae, Quadrupedum Domicilia et migrationes Sistens, in particular, I have read with much pleasure, and improvement! I am informed that this work has been extended into a more comprehensive plan, which I have not been so fortunate as to see.

For several years, I have been engaged in collecting materials for a large work, the title of which I take the liberty of enclosing. This work will embrace the outlines, at least, of the natural history of those numerous tribes of coloured men, who originally inhabited the almost whole extent of North America, and who still occupy some of the fairest portions of this great continent.[1478] *You see, therefore, I propose to follow your steps, in that ample field, in which you have reapt so large a harvest of treasures, and of beauties. It must, necessarily, be a considerable time before my work will be published. The plan is extensive: much more so indeed, than what I originally contemplated. There hardly passes a day that does not greatly augment the quantity of my original materials; and as we are just becoming acquainted with some of the tribes which inhabit the rich countries to the west of the Mississippi, I flatter myself, that delaying the publication of the work, for eighteen or twenty months, will render it, when it does appear, more worthy of the public attention.*

In the meantime, I am anxious to hear of every new publication, that involves any of the subjects of my inquiries. I am, especially, desirous of knowing, what are the latest editions of your Specimen, and of the larger work. You will oblige me by informing me.

You will, doubtless, have heard of the numerous vestiges of an ancient extensive population which are daily discovered in different parts of North America, particularly in that vast district of the continent which lies to the west of the great Alleghaney-Chain of mountains. Accurate engravings of several of them will accompany the work.

It would afford me great and real pleasure to send to you, from time to time, much of our new publications, in science and in literature, as I think might contribute to your entertainment. As yet, science and literature are but in an infant state in the new empire of the Americans, and very few

1475 *Allegemeine Deutsche Biographie* (Leipzig, 1875–1912).

1476 Barton papers, APS.

1477 In his *History of Quadrupeds* ed. 3 (London, 1793) Pennant wrote that Zimmermann, "by his correspondence and his admirable book of *Zoologie Geography* enabled me to speak with great precision on the animals of different climates, and to ascertain their different abodes and final limits." (Preface p. ix.)

1478 Barton did not complete a comprehensive treatise on the American Indian. His *New Views*, ed. 2 deals mostly with languages.

original works, of merit, have made their appearance among us. The Philosophical Society, of this city, has published two volumes in quarto of their Transactions, and a third volume is entirely printed off, and will be published in a few days. The Academy of Arts and Sciences in Boston has also published a quarto volume of Memoirs. Dr. Belknap has completed his History of New Hampshire, in three volumes, octavo. Dr. Ramsay has published (in two volumes octavo) the History of the American Revolution. Bartram has favoured us with his Travels, a work which contains a good deal of curious information concerning the southern animals, vegetables, &c. Morse has just published two large octavo volumes of a work on General Geography. Several European works, particularly the Encyclopaedia Britanica which is published in Edinburgh, and the quarto edition of Guthrie's Geography, are reprinting in this city.

If you will let me know to whose care, either in London, Amsterdam, or Hamburgh, I may occasionally address, as presents, the more important of our new publications, I shall send them with great pleasure. Perhaps, this might, sometimes at least, be done through the medium of Mr. Pennant, or Sir Joseph Banks, with whom I have the happiness to correspond.

Should you favour me with an answer to this letter, I do not know to whose care you could address it with a greater prospect of its reaching me than to Mr. Pennant. You have, no doubt, however, correspondents in Amsterdam and Hamburgh, from both which places vessels frequently sail to this port. I have the honour to subscribe myself, Sir, Your most humble servant &c.

Benjamin Smith Barton.
Exact copy[1479]

Zimmermann, probably the best informed zoologist in Europe for his command of the literature dealing with American fauna, had translated Bartram's *Travels* into German.[1480] He translated Barton's *Memoir concerning the Rattle-snake* as *Abhandlungen über die vermeinte Zauberkraft der Klapperschlange*, adding his own commentary.[1481] Barton composed his *Supplement to a Memoir concerning the Rattle-snake*, as a letter to Zimmermann and included some of his suggestions. In his new edition, *Memoir concerning various species of Serpents*, Barton commented on Zimmermann's translation as extending a knowledge of the subject into "one of the most learned portions of Europe." He commented with presentiment that Zimmermann's writings "will, if I live, continue to instruct me." This edition, he wrote, has "Many new notes...Not a few...are translations from those which the late Professor Zimmermann...annexed to the translation which he made of my memoir."

Barton published his letter to Zimmermann in which he had complained that he had not received the translation made of his paper on the rattlesnake, nor had he received a copy of Blumenbach's criticisms. Indians, he reported, do not believe in charming. He included other natural history news: charming West Indian iguanas with music; gars that hide in reeds and extend the rostrum in upright position; and he quotes material learned from Heckewelder.[1482]

Answering a request of Barton's, Zimmermann wrote 1 October 1803, sending copies of recent German books as gifts and for sale, and requested American books in return. He also reported on recent German discoveries in natural history.[1483] It may have been in response to

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1479 Barton papers, APS.

1480 *Reisendurch Nord- und Süd-Karolina, Georgien, Ost- und West-Florida* (Berlin, 1793).

1481 See Appendix I, Bibliography of Barton's Writings, no. 27.

1482 *Philos. Mag.* 15 (1803): 193–202, 294–300.

1483 BPL.

Zimmermann that Barton left himself an updated memo that he had sent *New Views*, but had not heard of its receipt. He now sent *Fragments*, which "please transmit to Göttingen." He wanted a copy of Erxleben's work on *Mammalia*,[1484] and he wanted a work on fossils. A very brief response in German came 27 February 1804, the letter signed "Gebruder Zimmermann" in Hamburg, and referring to the Professor in Brunswick. There correspondence seems to have ended.[1485]

Blumenbach

Sometime, probably shortly after Johann Friedrich Blumenbach (1752-1840)[1486] had been elected to the American Philosophical Society in April 1798,[1487] Barton introduced himself by letter to the scientist whose work is still basic to modern anthropology. Blumenbach was born into a cultured wealthy Protestant family and studied at Jena and Göttingen, gaining his M.D. in 1775 and becoming a professor at Göttingen. While in Edinburgh writing his thesis on albinos, Barton had come upon Blumenbach's thesis, *De Generis humani varietate nativa liber* (Göttingen, 1776), and realized he needed more information before continuing. His letter to Blumenbach, however, referred to his desire of obtaining fossils, "particularly of such as would be of service in illustrating the great outlines of mineralogy," and he would make a return.[1488] Blumenbach evidently ignored this request as too far from his interests. Barton planned to visit him in 1815.

De Generis inspired Barton to an extended review under "Facts and Speculations" in the *Philadelphia Medical and Physical Journal*[1489] in which he added at length his own observations and criticisms of the older man's work, suggesting that the learned professor needed to observe more closely. Barton believed there are more diseases common to both humans and other animals. He noted a number of similarities in diseases, abortions, and difficult births. He suggested that the doctor pursue his investigations more carefully. Barton himself knows little of nostalgia as a disease, but would not exempt dogs. He thinks a study of pediculi in different parts of the world would help in tracing human migration, a novel idea, perhaps possible in that age! Not all of Barton's remarks were cogent. "I could not treat of this article at length, without appearing to treat it somewhat *ludicrously*." Barton obtained the third edition of *De Generis* (Göttingen, 1795), as well as five other titles, presently at Pennsylvania Hospital and the American Philosophical Society.[1490]

Blumenbach's review of Barton's paper on rattlesnake fascination was published both in German and in English in 1798. In a supplement, Barton refuted Blumenbach's belief that he had stated it was the rattle that "fascinated," since the snake seldom rattled except when irritated.

Part of an undated letter that may have been to Blumenbach is quoted in our Chapter XXII.

1484 Johann Christian Polycarp Erxleben (1744-1777), German naturalist, was author of *Systema Regni Animalis per Classes ordines, genera, species, etc. Classis I. Mammalia* (Leipzig, 1777), all that was published. If Barton succeeded in obtaining a copy, it is no longer in his library. Erxleben is in *Allgemeine Deutsche Biographie* (Leipzig, 1875-1912).

1485 Barton papers, APS.

1486 Walter Baron in *DSB*. Jeremy Norman, *Medicine, Travel, & Anthropology from the Library of...Blumenbach* (San Francisco, [ca. 1979]), Catalogue Six, also a biographical account and two portraits, vii and 11. No Barton items.

1487 APS "Minutes," 270.

1488 Barton papers, APS, Barton's rough copy.

1489 *PMPJ* Suppl. III (1809): 266-268.

1490 Ewan, "Barton's Library."

Thomas Christian Tychsen (1758–1834) theologist and Orientalist in Göttingen, wrote Barton commenting on *New Views* and sending queries. His letter of 16 June 1799, in German, was marked by Barton "recd July 29, 1800," but he recorded no answer.[1491]

Ebeling and Reimarus

It was Ebeling who facilitated Barton's Honorary Degree in medicine from Christianae Albertiae Academy in Kiel in 1797. Christoph Daniel G. Ebeling (1741–1817), German historian and scholar, was born in Hildescheim, Hanover, and studied theology at Göttingen.[1492] Although deaf, he became a teacher in the Handelungakademie in Hamburg in 1769; a professor of history and Greek at the Gymnasium in 1784, and in 1799 Librarian of the Hamburg Staatsbibliothek. He also was author of a history of seventeenth century music. He began an encyclopedia of the United States, which on his death had reached seven volumes.[1493] Volume one on Massachusetts cites Belknap's *Discourse* (1792) on p. 862; "Manasseh Cuttler's" plants are summarized on pp. 184–194. "Poison-Wood *Rhus vernix*"[1494] appears on p. 194. Note that he uses Linnaean binomials, e.g., "Garget. *Phytolacca decandra*," "*Nymphaea alba*." He informs us that "the Norway pine" is sometimes called "Apple pine," p. 188; that "Der amerikanische Teestruch...leaves used by country folk as substitute for Tee-Bohe braucht," p. 189. He cites "Beach oder sea Side plumb. *Prunus maritima* Wangenheimii," p. 184. Pennsylvania he describes in volume seven.

Barton announced in his *Journal* in 1805 that "For the following highly interesting communication, the Editor is indebted to his good and learned friend, Professor C. D. Ebeling of Hamburg," a letter of 9 October 1804 describing the progress of research in his country: "Our Literature is still very fruitful..."[1495]

In April 1807 Ebeling forwarded a letter dated 16 July 1806 from Johann Albrecht Reimarus (1729–1814) of Hamburg in which Reimarus questioned Barton's facts in his article on fossil elephant remains. After apologizing for the delay in sending the letter he reported on the forthcoming Fiftieth Anniversary of Reimarus's doctorate, and its celebration. He also commented on the current confusion and conflict in Europe.[1496] Reimarus's query related to Barton's "letter to Cuvier" in which Barton had published Bishop Madison's report of the discovery of some bones of the mammoth with the stomach contents in perfect preservation, and of the discovery of five skeletons of mammoths near the Ohio River.[1497] Reimarus queried whether there were any grinders. One could not be sure in the Siberian mammoth whether one was finding grinders or tusks. He also asked about membranes of the stomach, whether they survived, and the position of the stomach in relation to the bones. Reimarus's letter was published by Barton in his *Journal*,[1498] and republished in *Archaeologiae Americanae* at which time Barton stated that he had answered Reimarus, and in a second letter had corrected the impression that stomach contents had been found.

1491 Barton papers, APS.

1492 *Allgemeine Deutsche Biographie* 5 (1877), 524–525; Howard Serwer in *New Grove Dictionary of Music and Musicians*, Stanley Sadie, editor (London & Washington, D.C., 1980, 20 vols.), 5: 809; H. Tiemann, "C. D. Ebeling, Hamburger Americhanist," *Z. Vereereins Hamburg. Gesch.* 41 (1951); *Massachusetts Hist. Soc. Proc.* 59 (1926): 324–376; Grove, *Dict. Musicians.*

1493 *Erdbeschreibung und Geschichte von Amerika*, (Hamburg, 1793–1816, 7 vols. published). Volumes 1–6 were received by the American Philosophical Society during Barton's lifetime, Vols. 1 and 2, on 2 May 1794. Had this resulted from an introduction in an early letter from Barton? Ebeling was co-editor of *Amerikanisches Magazin* (Hamburg, 1796–1797, 2 vols.).

1494 [Poison Sumac, *Toxicodendron vernix* (L.) Kuntze. IPNI. ITIS.]

1495 *PMPJ* 2 (1805) Pt. 1: 194–199.

1496 T. P. Barton collection, BPL.

1497 *PMPJ* Suppl. 1 (March 1806): 22–35.

1498 *PMPJ* 3 (1808) Pt. 1: 137–138.

Reimarus on 25 June 1811 queried facts about the opossum.[1499] Barton published his answer as *Additional Facts relative to the Opossum.* The War led to Barton's concern for the safety of his European correspondents. In a letter to Reimarus at Hamburg he wrote:

> *My correspondence with my most valued correspondents on the continent of Europe, has, in a great measure ceased. In many instances, indeed, I know not whether they still live. This is actually the case with Professor Blumenbach, and some others. It is my prayer that this letter may reach you, in the full enjoyment of your active and happy mind. In the enviable possession of your enthusiasm for the acquisition of natural knowledge.*[1500]

On 30 July 1815 Ebeling sent Barton a list of books published in 1810 and 1811, and with news of botanical writers.[1501] Was this in answer to a query from Barton in preparation for his European trip?

Albers

Johann Abraham Albers (1772-1821), German physician, friend of both Blumenbach and Reimarus, wrote Barton 22 May 1805 that he wished to present two books, one a monograph on *Cinchona*, and the second volume of his *Materia Medica.* He also inquired whether Barton had received his *American Annals.*[1502] He would like to translate Barton's anatomy of the rattlesnake,[1503] a project for which Barton had had anatomical drawings made by Benjamin Latrobe, but the text for which Barton did not complete.

To the "gifted and accomplished Herr Doctor" Albers wrote in German on 26 June 1814, the letter forwarded through the courtesy of Reimarus's grandson, Herr Sieveking. Albers thanked Barton for his "excellent work" on the opossum. He had made an extract in German to make it available in the bookshops and had returned the original to his good friend and co-worker, Professor Blumenbach. The sad news was that Blumenbach's son has been killed in the War in the service of the English at Toulouse. "Good old Reimarus," ill for only a few days in hospital had requested a view of Barton's paper, this but a short time before he died.

Albers is sending a translation, he writes, a copy of Athanase Royer-Collardi's treatise on croup, to which Albers has added 266 notes, showing how much pains he has taken to collect everything written on the subject from ancient to American authors.[1504] Thanks to Valentin of Nancy he has received Supplement Three of *Philadelphia Medical and Physical Journal*, and was particularly impressed by the article of Dr. Dick[1505] on croup, and grateful for publication of it.

1499 See "The Opossum" in our Chapter XXV.

1500 Quoted in *Allg. Lit. Z.* (April 1814): 638.

1501 T.P. Barton collection, BPL.

1502 No copies of these titles located for Ewan, "Barton's library," There is, however, a copy of Albers's *Preisfrage, worin besteht eigentlich das Übel, des unter dem sogenannten freywilligen Hinken der Kinder bekannt ist?* (Vienna, 1807), at APS, once Barton's. A John Bohlen wrote Barton 29 July 1807 asking whether Barton had examined the books that Dr. Albers had sent, including one by Samuel Thomas Sömmerring (1755-1830). Although Morton, *Medical Bibliography*, lists nine titles of this eminent anatomist, none were located for Ewan, "Barton's library." Note that Albers spelled the name Saemmerring in his letter to Barton.

1503 BPL.

1504 A. Royer-Collardi (1768-1825), a French physician. The treatise as with so many other medical works sent to Barton was not located.

1505 Elisha Cullen Dick (1762-1825), studied under Rush in 1780, then under Shippen, earning his medical degree in 1782. "Facts and Observations relative to the Disease of Cynanche trachialis, or croup," *PMPJ* Suppl. 3 (1809). Dick was an attending physician for Washington's last illness, and advocated tracheotomy rather than the bleeding administered.

His own work, he continues, is not yet in press, but when completed he will send it to *Philadelphia Medical and Physical Journal.* He lacks the early numbers, and they are not in the Salzberg Medical Library. Albers has collected all of his papers, abstracts and reports for his friend.

In Germany there are many medical writings on zoology and comparative anatomy, but impossible to send until the war with England is over. It would be a great favor, however, if Barton would answer the following questions:

1. *Has Barton ever compared the tongue-papillae of a Negro with those of a European? He examined the tongue of a Negro woman, and those of a guillotined Mulatto, and found them larger than a European's. He sent his findings to Saemmering in Munich, who had his artist make a drawing.*
2. *He has found the stomach acid of a Negro stronger than that of a European, an observation made by other observers.*
3. *Yesterday he received a note from Saemmering of a Negro with six molar teeth on either side approximately as in the apes, and not seen in Europeans, and this is the second Negro to have six molars. Albers suggests that Barton make observations since to Albers this suggests clear proof of similarity.*
   Messrs. B. and T. Bohlen in Philadelphia and T. and G. Meyer in New York will aid in sending anything. And for London send to his brother at Kaufmann [Ltd.?]. *The address of his establishment is Messrs. Albers & Droop, no. 9 Love Lane, Eastcheap, London.*[1506]

Whether Barton answered the letter we do not know, but while Barton was seeking medical supplies in Europe in 1815, Albers recommended sources for him, and wrote that Professor Saemmerring has sent his treatise on crocodiles.[1507] Had he received Barton's paper, *Archaeologiae Americanae*? Albers was elected to the American Philosophical Society 15 October 1819,[1508] after Barton's death.

Jussieu

Among Barton's papers at the American Philosophical Society is a numbered list of plants "Sent to Mr. Jussieu," but no copy of that letter to Antoine Laurent de Jussieu,[1509] or one from him:

"Arethusa? Lonicera media? from Mr B's garden; Polygonum–from the swamp near Bartram's; Polygonum virginianum [Virginia Smartweed?] from Mr. Bartram; Gordonia pubescens[1510]? Hort Kewensis; Euphorbia heterophylla? from B's garden his picta; Hibiscus–with velvet leaves from ditto; Gentiana–affinis Gentiana sap[*onaria*, Moss Gentian] from ditto; Mimosa from B's garden; Helonias bullata? from ditto; Polygala? given to me by Adlum:[1511]

1506 In German, Barton papers, APS, which also has letters of 1807 and 1812.

1507 BPL.

1508 APS, "Minutes," 490.

1509 Antoine Laurent de Jussieu (1748–1836), nephew of Bernard de Jussieu, botanist who applied Linnaeus's system to plants in the Royal Gardens of Trianon. Antoine became demonstrator at the Jardin de Plantes but arranged plants by a natural system influenced by Ray–Acotyledons, Monocotyledons, Dicotyledons. He was author of *Genera Plantarum* (Paris, 1789) (from article quoted in Garrison, *Hist. Med.*, 312). Frans A. Stafleu in *DSB*; *TL-2*.

1510 [*Gordonia pubescens* L'Hèr.]

1511 John Adlum (1759–1836), civil engineer and surveyer, promoter of the Vine Company through his interest in the cultivation of American grapes [*Vitis*]. Barton evidently held stock. Adlum was author of *A Memoir on the Cultivation of the Vine in America and the Art of making Wine* (Washington, D.C., 1823). Bailey, *Standard*

the same of which I sent a specimen to Thunberg; and which Muhlenberg thought might be grandiflora of Walter. finis."

To Jussieu, Barton sent two preliminary sheets of his paper on *Siren lacertina*, expressing his wish for its publication in a French journal. Jussieu probably convinced David Bailie Warden, United States Consul General, that it was out of his field.

On 5 August 1809 Barton sent the only printed part of his *Geographical View* to Jussieu for suggestions, but there seems to have been no reply. Barton's letter to Jussieu is in our Chapter XIV. Jussieu's doctoral thesis (1770) compared animal and plant physiology. Had Barton been influenced by Jussieu's ideas on this subject?

Lacépède

From Bernarde Germain Etienne de la Ville-sur-Illon, Comte de Lacépède (1756–1825, Figure 62),[1512] came the answer to a letter dated 20 January 1797 that Barton received 21 November. Lacépède expressed his great interest in the novelties of North America, commended Barton for his works, and would gladly receive fresh specimens. He would add the information to *Histoire Naturelle des Quadrupèdes ovipare et des Serpentes* (Paris, 1788–1789, 2 vols.). He urged Barton to continue his observations on the wealth of new inhabitants of North America. He will be happy to "resitute" correspondence with him.[1513]

In 1802 Barton summed up progress in natural history in North America in his letter to Lacépède, delivered first to the American Philosophical Society.[1514] As reproduced in 1805 it read:

> *It is a long time since I have received a letter from you. I have anxiously expected one, as I am very desirous to know what progress you have made in your work on Fishes. I should indeed, have been very glad if my liesure had permitted me to have transcribed for your use a very considerable number of facts relative to the fishes of North America, especially of the United States. These facts will, however, be published in two works in which I am engaged, viz. my Fragments of the Natural History of Pennsylvania, and my Travels through various parts of the United States. I shall only observe at present, that many of our fishes are undescribed by the different writers whom I have had an opportunity of consulting; and I believe I may assert that much interesting matter relative to the manners, the migrations, &c. of various American species is entirely unnoticed.*

He also reported that "the museum, founded by our countryman Mr. C. W. Peale, is very respectable, both for the number and value of the articles which it contains. Within the last three or four years several new species of quadrupeds, or mammalia, have been discovered, and our knowledge concerning other species has been greatly extended." Of his aims he wrote: "I have had a number of very fine drawings made to represent the anatomical structure of the Crotalus. These drawings it is my intention to have engraved, by some of the best of your artists, for my Anatomy and Physiology of the Rattlesnake; a work which I hope to publish in three or four years." In writing of extinct animals Barton concluded "for nature, it would seem, is much less anxious to preserve the whole of her created species than some illustrious naturalists have supposed."

Cyclopedia of Horticulture (New York, 1927), 1563, portr.; Dorothy S. Manks in *Huntia* 2 (1965): 59–66; Edward H. Jenkins in *DAB*.

1512 Tobby A. Appel in *DSB*. Adler, *Contributions*, 14, portr.

1513 BPL.

1514 APS, "Minutes," 327.

Barton had evidently sent his letter to Lacépède hoping it would appear in a French journal. We have not traced it there. Whether Lacépède forwarded it to England, or Barton sent a copy, Tilloch published it in *Philosophical Magazine* in 1805.[1515]

On 17 September 1806 Barton sent two copies of his *Facts relative to the Opossum*, one copy to be presented in his name to the National Institute. He inquired about oviparous quadrupeds and serpents planned for the next edition of *Histoire naturelle*, and he mentioned his "tuza." Then in 1814 Barton dedicated his *Memoir concerning various Species of Serpents* to Lacépède, writing, "For more than twenty years of my life, you have honored me with your correspondence. While your letters have instructed me, they have ever stimulated me to new exertions in the walks of my favorite studies, those studies which, in an earlier and less prosperous period of my life, were my solace and delight, even in the midst of poverty and care."[1516]

Lacépède by this time had turned to affairs of state, to writing a natural history of man, and a work on the development of civilization. Privately educated, after an attempt as a composer of opera, Lacépède had turned to science influenced by his admiration for Buffon, who obtained for him the post of keeper and demonstrator at the Cabinet du Roi in Paris. Buffon persuaded Lacépède to assume part of his *Histoire naturelle*, and after Buffon's death Lacépède completed the natural history of fishes (Paris, 1798–1803, 5 vols.) and cetaceans (Paris, 1804).

With his trip to Europe in mind Barton addressed "Count La Cépède, member of the National Institute, &c. Paris," 10 July 1814:

> *Sir,*
>
> *The great revolution which has taken place in your country, has not, I hope, in any degree, affected your fortune, happiness, or health. I have often thought of you, and I shall continue uneasy about you, until I shall learn from yourself, that you are well and safe.*
>
> *I avail myself of a very favourable opportunity by Dr. Bollman,*[1517] *when I take the liberty of introducing to you, of sending a small pamphlet, the reading of which may amuse you. I shall in a short time, transmit a copy of my large work on the 'Mammalia' of the United States, the first volume of which is nearly printed off. It will contain the descriptions of not a few new quadrupeds, some of them large, others small.*
>
> *I shall be happy to learn, by the return of Mr. Bollman, from yourself, and of the progress of those important works in which you have been engaged, and especially of the work on the human species, which you formerly mentioned to me. My work on the Natural History of the American Indians, a work of considerable content, is nearly completed. I send to you impressions of two of the plates which are to accompany the work.*[1518] *One represents a northern, and the other a southern savage. I take the liberty of requesting you not to suffer these prints to pass out of your hands. The sight of them will, I think, be acceptable to you, and to M. Cuvier, and other learned naturalists. With the highest consideration, Dear*

1515 *Philos. Mag.* 22 (1805): 97–103, 204–211.

1516 Barton papers, APS. Presumably his copy.

1517 Justice Erich Bollman (1769–1821), born in Hanover, studied medicine at Göttingen, and practiced in Karlsruhe and Paris. Banished for his attempted rescue of Lafayette during the French Revolution, he came to the United States in 1796. He was elected to the APS 17 January 1800 for his scientific interests and attended meetings until 1816, when he left for England. He died in Jamaica. Among his writings was *Paragraphs on Banks* (Philadelphia, 1810). Isaac J. Cox in *DAB*; Drake, *Dictionary*; APS "Minutes."

1518 What became of Barton's illustrations of the Indians?

Sir, Your very obedient servant
Benjamin Smith Barton
Philadelphia, July 10, 1814[1519]

Cuvier

A leading anatomist, Baron Georges Leopold Chretien Frederic Dagobert Cuvier (1769-1832) was born at Montbeliard and educated at the Academy of Stuttgart. He taught in the Jardin des Plantes from 1795, and in 1803 became permanent secretary of the Academy of Sciences, and later Chancellor of the University of Paris.[1520] He was originator of a system of animal classification, and his restoration of the soft parts of fossils deduced from skeletal remains was an important contribution to paleontology.

Barton sent Cuvier a molar of the "American mastodon" found on a river in Missouri.[1521] It was placed in the Cabinet du Roi.[1522] He also published a letter dated 14 October 1805 addressed to Cuvier on "Elephantine Bones" found in various parts of North America, with a "Postscript" on extinct American Elephants.[1523] Barton sent his *Memoir concerning the Rattlesnake, Facts relative to the Opossum, Account of Siren lacertina*, and *Memoir concerning the Hell-Bender*.[1524] Cuvier sent Barton three of his works: *Extrait d'un Ouvrage...de Quadrupèdes* (Paris, 1800) "from the author," which is at the American Philosophical Society, and, among Barton's books in the Pennsylvania Hospital Library: *Recherches Anatomiques sur les Reptiles* (Paris, 1807); and *Recherches sur les Ossemens Fossiles de Quadrupèdes* (Paris, 1812, 4 vols.).

While Barton was in Paris in 1815, although ill most of the time, Cuvier and he had stimulating discussions as Cuvier oversaw that he was cared for. To Cuvier he willed his fossils, drawings and descriptions of mammals as a mark of his gratitude and respect. Back in New York on 8 or 9 November 1815 Barton requested that Alexander Lawson's proof impressions of the Argali, and David Edwin's proof impression of Delaware, Chickasaw, and Osage Indians be sent to Cuvier.[1525]

Grassi

While Dr. A. M. Grassi was in Philadelphia he was elected 15 January 1796 to the American Philosophical Society. On 21 April 1797 thanks were voted to him for "Carte Botanique" and "Notions élémentaires de Botanique." Back in Bordeau, on 21 November 1800 he was negotiating for a French encyclopedia for the Society.[1526] His letter from Bordeau in July of 1802 we have not seen.[1527]

1519 Barton papers, APS. Rough copy.

1520 Adler, *Contributions*, 17-19, portr.; [anon.] *Cuvier and Zoology, a Popular Biography, with an Historical Introduction and Sequel* (London, 1814); chap. III, "Life and labours of Cuvier," page 77, details his principles. No Barton correspondence or visit is mentioned. Nor in Frank Boudier in *DSB*.

1521 [Both Mastodon, *Mammut americanum* Kerr, 1792, and Mammoth, *Mammuthus* Brooks, 1828, remains have been noted from Missouri, including *Mammuthus jeffersonii* Osborn, 1922. APS.]

1522 G. G. Simpson in *Proc. Amer. Philos. Soc.* 86 (1942): 173-175.

1523 *PMPJ* Suppl. 1 (March 1806): 22-35; and Suppl. 2 (1807): 166-173, republished in *Archaeologiae Americanae* (1814): [9]-27, with additional notes.

1524 Edward Griffith, editor, *Classified Index and Synopsis of the Animal Kingdom...by the Baron Cuvier* (London, 1835), 285, volume 16 of *The Animal Kingdom arranged in Conformity with its Organization* (London, 1827-1835).

1525 HSP.

1526 APS, "Minutes," passim.

1527 BPL.

Mirbel

Charles Francis Brisseau de Mirbel (1776–1854), born and died in Paris, was an early plant anatomist and morphologist at the Museum of Natural History. He joined the Faculty of Sciences in Paris in 1808.[1528] The American Philosophical Society recorded receipt of his *Traité de Anatomie et de Physiologie Végétales*, (Paris, 1799, 2 vols.) 21 June 1805.[1529] In a response to Barton, Mirbel presented a copy of his *Exposition de la Théorie de l'Organisation végétale, servant de Réponse aux questions proposées en 1804 par la Société Royale de Göttingue* (Paris, 1809).[1530] Mirbel's friendly letter of 9 May 1809, received 18 August, is in the Boston Public Library.

Persoon

Christian Hendrik Persoon (1761–1836),[1531] born at the Cape of Good Hope of Dutch parents, spent most of his adult life in Paris from 1802, but without a professional income. He had studied theology at Halle (1783–1786), medicine at Leiden (1786), and medicine and natural history at Göttingen (1787–1802) without attaining a degree. For his botanical achievements, however, he was later awarded two honorary degrees. To Persoon on 12 June 1803 Barton wrote:

> *Sir, I learn with much satisfaction, that you are engaged in the publication of a new edition of the Species Plantarum. I am very anxious to know when any part is to be published. It is in my power to send you many specimens of North American plants, some of which are now imperfectly described. If upon the receipt of this, you will return to me your answer informing me whether my specimens will be in time they will be sent to you for your acceptance.*
>
> *I shall also thank you to inform me whether the Flora Danica is yet completed, and whether it will be possible to procur a copy of it, in exchange for books relative to Natural History, Botany, &c.*
>
> *If my friend Mr Ebeling be yet alive, your letter may be forwarded through his hands, or through the hands of Sir Jos: Banks. I have the honour to subscribe myself, Sir, Your very humble Servant &c.*[1532]

Barton seems not to have received a reply, but Jefferson by way of Warden received Persoon's *Synopsis Plantarum, seu Enchiridium Botanicum...* (Paris, 1805–1807, 2 vols.), the work about which Barton had inquired. At Barton's request in October 1810, Jefferson loaned him the *Synopsis* until "early in April next," since Barton must return the copy he had borrowed from Muhlenberg for his work on *Flora Virginica*. Barton wrote Jefferson that "a portion, not inconsiderable, of my labors on plants of Virginia will appear before the public in the spring."[1533] He knew of no other copy of Persoon's *Synopsis* in the country. Not until 28 February 1815 did Jefferson request the return of the *Synopsis*. This was after Congress had purchased his library and Barton was about to leave for Europe.

On 26 July 1811 Barton had written to Persoon:

1528 *DSB*; Pritzel, *Thesaurus*.

1529 APS, "Minutes," 375 and 417.

1530 Ewan, "Barton's library."

1531 M. A. Donk in *DSB*; Wagenitz, *Göttinger*, 136; portrait at Hunt Institute for Botanical Documentation.

1532 Botanical Garden Library, Copenhagen.

1533 Lipscomb & Bergh, *Jefferson*, 19, 223.

Sir,

I beg your acceptance of all the sheets, yet marked off, of my Flora Virginica. You will immediately perceive, what use I have made of your valuable 'Enchiridium' a copy of which was lent to me by Mr Jefferson, after I had made some progress in my work. I shall take great pleasure in forwarding to you the remaining sheets, as they come from the press. Make what use you please, of my labours, in the way of reference, &c.—but I beg you not to let the work be seen by any one but Yourself. To Mr. de Jussieu I also send a copy.

Then Barton made a note for himself:

N.B. Along with this letter, I sent to Mr. Persoon, the exact half of Preface the last page of which is xii of the Flora Virginica, 256 pages of the work, common paper, all folded:—a blank, 2 more, between page 24 & page 33, which I have yet printed. I made note in the copy but the smallest alteration or correction, with the pen, pencil,—that is I sent 7 half sheets; ending 'are somewhat'

N.B. I sent under same seal, one copy of my paper on didelphus.

N.B. I directed the letter thus, 'Mr. C. H. Persoon, Botanist, Paris, Honoured by Joel Barlow, Sig.' I wrote a letter to Mr. Barlow, of which I kept no copy, & sent the whole, under cover to the Secretary of State [of the United States to go in the diplomatic pouch].[1534]

Persoon acknowledged receipt in November 1811. He anticipated receiving the completed Flora and complimented Barton on the establishment of his botanic garden.[1535] Barton may have hoped in return to obtain Persoon's *Synopsis*. In his letter to Barton from Paris 15 July 1814, Persoon explained that due to war conditions his "letter and botanical work," which had been put into the hands of François Michaux, had not been forwarded.[1536] Was the "botanical work" the *Synopsis*? There is no record of any work by Persoon having been in Barton's library. Since Persoon did not consider himself a qualified judge of American flora he wrote to Muhlenberg wishing to have an opinion of Barton's *Flora*. Whatever Muhlenberg wrote to Persoon, to Stephen Elliott he reported that "unluckily we can not get to see anything of this work. I had a distant look but there was nothing like a multum in parvo."[1537] Muhlenberg had never approved of what he considered Barton's delving into synonyms and early published records, and so his report may well have been unfavorable.

Although Persoon considered disposing of his herbarium in the United States, as he wrote Barton, the difficulties of wartime rendered it too difficult for safe transportation, and he changed his mind. In 1828 the Dutch government granted him a pension in exchange for the collection, and it is now in Leiden. Did the ailing Barton have a visit with Persoon while in Paris in 1815? When, after his uncle's death, William P. C. Barton assumed presidency of the American Linnaean Society, he sent Persoon on 6 June 1816 a "diploma" of membership, and enclosed some of his own publications.[1538]

1534 Barton's "exact copy," APS. Copy sent: *Acad. Lugd. Bot. Bibl.*

1535 Barton papers, APS.

1536 Hunt Institute for Botanical Documentation.

1537 Muhlenberg letters, AA.

1538 Copy at APS.

Valentin

Dr. Louis Valentin (1758-1829),[1539] trained at the University of Nancy as a military physician, had been practicing in Cap François, Santo Domingo. He left the island after slave uprisings and burning of the city. He spent most of his time in Virginia, but attended meetings of the American Philosophical Society in Philadelphia. He presented a paper on "inoculations" at a meeting 18 August 1792, and was elected to the Society 18 January 1793. At a meeting on 7 February 1794 he requested a second certificate of membership for that lost in the flames at Cap François "during the late disasters." Had he returned briefly to the island? His acknowledgement from Paris of its receipt was read to the Society at the meeting of 21 July 1797.[1540] From Norfolk, Virginia, 16 April 1796, he had written to Barton thanking him for his hospitality when he was in Philadelphia seventeen months before. He also inquired what use had been made of his account of the use of extract of hemlock.[1541]

Valentin wrote Barton 1 November 1798 that he was sending some pamphlets, but if they arrived they are no longer in Barton's library. These had been sent "according to my promise by the last I wrote you from Montpellier, bearing the date August 20th 98," but this letter may not have reached Barton. He would like a copy of Barton's work on Indians—his *New Views*—as well as any medical pamphlets, especially on bilious and yellow fever. He has Dr. Currie's work, and would like the latest volume of the American Philosophical Society's *Transactions*. He also wished seeds of cranberries, persimmons, and maple trees. Barton in turn requested mineral specimens.

"Messrs Deveze[1542] & Beauvois have now arrived at Paris & send you their best compliments," he continued. Jean Deveze (1753-1829) was a physician who spent some years in Philadelphia. Had he also fled the West Indies? On 15 August 1794 he presented three copies of his "Observations on the late Epidemic" to the American Philosophical Society. Deveze was elected a member 15 January 1796, and his attendance at meetings is recorded until 21 July 1797. His "New method of treating the effusion which collects under the skull after fracture of the head" was accepted for publication 22 June 1798, and was published in the *Transactions* 4: 433. Beauvois had left Peale's employ for a safe return to a more stable Paris.

Valentin added a postscript to his letter: "Be so good as to let me know if the yellow fever has carried out many victims this fall & if the opinion of its importation still continues to be maintained. What method of cure has succeeded best &c Did it prevail likewise in any other quarters of the United States." He then described some of the trees of his area, and the ranges of plants.[1543]

At a meeting 16 October 1801 Barton reported a pamphlet-letter sent him by Valentin from the "Comité pour l'Inoculation, stating progress and soliciting the creation of similar establishments."[1544] On 16 November 1804 a letter from Valentin and his "Traité de la Fievre Jaune" were deposited with the Society. His last recorded communications to the Society, unspecified, were 21 June 1816, and 15 August 1817.[1545]

Vauquelin

In May of 1812 Barton wrote to Monsieur Louis Nicholas Vauquelin (1763-1829),

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1539 Biographical notes and a letter to Rush are in Butterfield, *Rush*, 980, 981. Butterfield cites *Journal Complémentaire du Dictionaire des Sciences Médicales* 34 [1829]: 84-86.

1540 APS, "Minutes," passim.

1541 HSP.

1542 Devese, as given in APS "Minutes," passim, the origin of "Dewees"?

1543 HSP.

1544 APS, "Minutes," 316.

1545 APS, "Minutes," 464, 473.

analytical chemist, that he found caoutchouc "in a formed state, in great quantity" in the ripe berries of "Smilax caudca,"[1546] which was "very common in the neighborhood of Philadelphia," and he was presenting him with a quantity of berries through the hands of Mr. Barlow. He will keep Vauquelin informed of further discoveries on the subject, he writes. We have found no answer from Vauquelin, nor record of Barton's experimenting with the substance he hoped might be used as a very elastic resin.[1547]

Fischer von Waldheim and Tilesius

Barton's neighbor, the Russian consul, Andrew Dashkov (Mr. Daschkoff of letters), facilitated Barton's efforts to effect natural history exchanges with St. Petersburg, although Franklin had made contact with Princess Catherine Dashkov as early as 1781, and she had been made a member of the American Philosophical Society in 1789. Barton sent his *Memoir concerning the Rattle-snake* and his *New Views* to open the door in St. Petersburg. Three correspondents resulted: Fischer von Waldheim, Tilesius, and Langsdorf.

To Gotthelf Fischer von Waldheim (1771–1853),[1548] who had come from Mayence and founded the Imperial Society of Naturalists of Moscow in 1805, Barton sent his *Facts relative to the Opossum*. This German anatomist and entomologist, and colleague of Blumenbach, wrote Barton from Moscow 3 February 1810,[1549] Barton marking the letter as received 19 November that year. He informed Barton of his election to the Russian Academy, and that he was sending his illustrated *Notice d'un animal fossile d'Siberie* (Moscow, 1808), fossils in the Academy's museum, the copy now at Pennsylvania Hospital. Fischer von Waldheim may not have received a response from Barton, for on 15 September 1811 he expressed a wish to a visiting John Adams that he become a correspondent of the Society. He was eventually elected a member in 1818.[1550]

It was also through Consul Dashkov that Barton came into possession of two stunning drawings originating on the Krusenstern Expedition. An officer on this Russian expedition was Wilhelm Gottfried Tilesius (von Tilenau) (1769–1857),[1551] born in Thüringen, now Germany, who served on the ship *Nadezhda*.[1552] The ship landed on the island of Santa Catarina, south of Rio de Janeiro, for repairs sometime between 9 December 1803 and 23 January 1804. Tilesius made a colored drawing of a Brazilian frog evidently from the living animal taken on board after putting out to sea bound for Cape Horn and the North Pacific (Figure 71). Tilesius, with his shipmate Johann Christian Schneider, published on "der gehörnter Krote" illustrated with an uncolored drawing.[1553] The present name of the frog is *Ceratophrys aurita* Reddi.[1554] Had Tilesius accidentally included for Barton his magnificent, colored drawing of his Brazilian frog? Tilesius also sent Barton a drawing of a giant sea anemone colored by the

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1546 [Smilax caudea, *sic*, or *Smilax caduca* L. has been considered conspecific with the Catbriers *Smilax rotundifolia* and *S. walteri*, Coral Greenbriar. IPNI. ITIS.]

1547 Barton papers, APS.

1548 *TL-2*; Nissen, *Zool. Buchillust.* (1966) 1: 144–145; Essig, *Entomology* 631–632.

1549 Letter in BPL.

1550 "Minutes," 431, 481. Fischer's paper on fossils, and others are in APS library.

1551 W. Hess in *Deutsche Allgemeine Biographie* 38: 298–299. B. N. Komissarov, [*Pervaia Russkaia Ekspoditsiia v Braziliiu*] (Leningrad, 1977), gives Russian sources for the history of Brazil during the first third of the nineteenth century–there is no English version, but the Russian original and an unpublished Portuguese translation, Museu Zoologia Universidade de São Paulo. Bretschneider, *China*, 314–316, gives an account of Tilesius as naturalist. For his writings see Nissen, *Zool. Buchillust.* 1: 408.

1552 Nozikov, *Russian Voyages*, chap. I.

1553 *Mag. Ges. Freunde Naturl. Berlin* 3 (1809): 83–94. tab. 3, uncolored. Schneider's *Historia Amphibiorum Naturalia* (Jena, 1799–1801, 2 vols.) is in Barton's library, PH. Johann Moritz Rugendas also painted the frog, labelled *Proceratophrys boiei* Wied, 1825. It is unnaturally out of the water on a rock, a color illustration in *Expedição Langsdorff ao Brasil 1821–1829* (Rio de Janeiro, 1988), vol. I: Aquarelas e desenhos de Rugendas, no. 14.

1554 P. E. Vanzolini, letter of 19 October 1982.

artist, collected on the same expedition at Port of St. Peter and Paul, Kamchatka, 4 August 1804. Tilesius published the description and an uncolored drawing.[1555]

Sometime about 1806 in answer to a request, Barton received from Tilesius "some fine large drawings" of the Siberian mammoth[1556] that had been taken from about the mouth of the Lena River. Barton has left the record of receipt of Tilesius's information in a letter to Jefferson, written from near Paris, Blue Ridge Virginia, dated 13 June 1810, while he was on a foray. "For this, to me inestimable, present, I am indebted to the kindness of Mr. Tilesius, an eminent naturalist and by whom the drawings were made and who has, at the same time favoured me with some important manuscript observations concerning the animal." And again, "Mr. Tilesius' drawings are of great importance to me; and they came, unasked and even unlooked for, almost at the very time that I was busily occupied in superintending a drawing of the skeleton in the museum."[1557] When Tilesius did not receive an acknowledgement of his letters and drawings, he complained to Levett Harris, then American consul in St. Petersburg, and Harris suggested Wistar as a more promising correspondent.

Letters from Tilesius to Wistar in 1813 and 1814 requested the return of manuscript and drawings to him.[1558] Letters between Wistar and Jefferson during 1807 and 1808 convey the care Wistar showed in mastering mastodon anatomy, hence he was a natural suggestion to succeed Barton as a correspondent for Tilesius. Had Barton misunderstood that Tilesius's drawings and manuscript were only a loan? Or had Tilesius requested their return because he had not received two books he had requested? The work by van Braam, which Barton may have suggested was to appear in Philadelphia edition, was not republished. Tilesius's first letter, translated in an unknown hand, reads in part:

> *Mr. C. Wistar, Anatomiae Professor, Philadelphia*
> *St. Petersburg, the* [blank] *October 1813*
>
> *Sir!*
>
> *When I lately handed some papers and letters to the care of the American consul, Mr. Harris, I was informed of your having requested him to procure for you a correspondent in this place, who could furnish you with some information about the small siberian mammouth and other fosil animals digg'd out in Russia. Mr. Harris after having shewn me your letter, wished me to answer your questions, and to send you the discussion written by Mr. Pallas about the fossil remainder of animals once alive at the russian territory but now extinct. After the accounts given me by Mr. Harris about yourself I am very willing to forward by degrees everything written on that subject, moreover as I now dare hope to receive from your place for which I have been waiting for these six years. I have answered all questions of Mr. Smith Barton and also sent him every work of the Imperial Academies he wished for, but I never was favoured with a single line afterwards. In the year 1806 after coming home from a voyage round the world I wrote Mr. Barton that I only wanted two things from Philadelphia, viz. a book in two quart volumes, called 'Voyage del' ambassade hollandoise en China, par Van Braam Hougreat*[1559] *printed in Philadelphia'*

1555 *Mém. Acad. Imp. Sci. St. Petersbourg*, sér. 5.1 (1809): 88–422. pl. 14.

1556 [The Siberian or Woolly Mammoth, *Mammuthus primigenius*, is credited to J. F. Blumenbach, 1799. Its distribution extended into North America. APS. MSW.]

1557 The letter to Jefferson, Jefferson papers, LC. Barton published his letter in his *Archaeologiae Americanae* [28]–33. The work was noted in Clinton, *Discourse*, 65. Barton did not quote Tilesius, but noted a "few similarities" and differences between Ohio and Russian fossils, and stated that he had "nearly prepared" an extensive memoir on the extinction of species of mammals.

1558 Wistar papers, APS.

1559 André Everard van Braam, *Authentic Account of the Embassy of the Dutch East India Company, to the Court of the Emperor of China, in the years 1794–1795* (London, 1798, 2 vols.), translated from the French by

> *and these (Marine Islands) seaweed* [Fuci] *outcast from the american shores, notwithstanding Mr. Harris gave his promises that Mr. Barton would send these two things directly. I've never seen one or the other, therefore and as I am now bound to think I never shall receive them through Mr. Barton, I request you to procure me these things I wanted. I am one of these naturalists, who as formerly Mr. John Ellis, London, only have made it their pleasure to work at these branches of the natural history which are less known and less liked and therefore less cultivated, this you will see at the supplements hereby...Manuscripts remain often for years in our Academy, and their publication are by much slower as in the center of the german and french literatures, but it seems to me as if the present warlike time be the cause and not an indifference of the russians for natural history. It is a misunderstanding if you have been informed that the said manuscript having been printed and this error springs perhaps from information give to you by Mr. Barton to whom I have sent an abstract of the description and a copy of my own hand of the siberian mammouth. Whether Mr. Barton has published any of my discussions or drawings in an american journal I know not, however, I am told so by Mr. Harris, but have never seen that paper which shall contain this object. You would therefore oblige me very much should anything have been published of these papers I have sent to Mr. Barton to let me have them.*[1560]

Wistar, he continues, was already the fifth scientist to enquire for information on these animals and for whom he had copied manuscripts and drawings, but none ever published them. He thinks that Wistar's enquiry is proof that "Mr. Barton has buried his drawings and descriptions in his desk." He would be glad to have Wistar give his material to the public. Since Wistar resides in the same town, Tilesius requests him to ask Barton for the copy and Latin description of the Siberian Mammoth[1561] he had sent over two years before to compare with the Ohio Mammoth, "(the incognitum of Blumenbach), le grande Mastodonte Cuvierie." Nothing is so disagreeable to him as when he has gone to a great deal of trouble to no purpose, but if Wistar will send material he will work indefatigably for him. The rest of the letter deals with information on Siberian finds, though he laments that "My time is too much occupied to allow me to give myself the troubles as I did before on those now in the possession of Mr. Barton." Tilesius's letter of 21 January 1814 again mentions his dissatisfaction with Barton's neglect. War conditions make publishing uncertain, Tilesius told Wistar. Could that also have been a reason he had had no response from Barton? Letters lost in transit?

Tilesius's drawings of the mammoth, and the Brazilian toad and "actinea" still rest among Barton's drawings. Unspecified donations from the St. Petersburg Academy were announced at meetings of 21 July 1815 and 6 October meetings of the American Philosophical Society.[1562]

Hougreat [?]. There is no mention of a Philadelphia edition either in Barton's library (PH), or in *Library Company Catalogue* (Philadelphia, 1835), 700. Had Barton written Tilesius that he planned to produce a Philadelphia edition?

1560 Translation of the letter in an unknown hand; microfilm at APS.

1561 [The Siberian Mammoth *Mammuthus primigenius* Blumenbach (1799) differs from the American icognitum, noted by Barton in 1810 as *Elaphus mastodonus*. Proboscidea may be readily distinguished by their molars. APS. WMW.]

1562 APS, "Minutes," 457, 458.

Langsdorff

Before 1803 Barton had sent to Georg Heinrich von Langsdorff (1774–1852)[1563] copies of his *Memoir concerning the Rattle-snake* and his *New Views*. Three letters survive among Barton's papers. Born in Hessen, Langsdorff, having studied under Blumenbach, graduated in medicine in 1797 at Göttingen, then accompanied Krusenstern and Tilesius on the first Russian circum-navigation of the globe, 1803–1806, the very years of Lewis and Clark's penetration to the Pacific Coast. His resulting work, originally in German,[1564] was translated and published in two volumes as *Voyages and Travels in various Parts of the World, 1803–1807* (London, 1810–1818). Referring to some earlier letter from Langsdorff, Barton wrote giving details of his progress in publications, and his expectations of results from Nuttall's explorations. As usual he requested plants in exchange.

> *Philadelphia April 1810*
>
> *Sir,*
>
> *Your letter, enclosed in one from Mr. Harris, has come safe; as have also the valuable books which you have been so good as to procure for me. I beg you to accept of my sincerest thanks for your polite and great attention to me. For more than ten years I have been in pursuit of the Flora Siberica,[1565] which I conceived to be a work of much importance to me in my inquiries into the history, geographical range, &c of the plants of North America, which, in many instances, resemble those of Northern Asia.*
>
> *I shall make every effort to procure for you the work of van Brahm,[1566] nor am I without hopes of procuring it, and of forwarding it to you by the present conveyance. If I fail in my endeavours I hope you will not ascribe to me an indolent inattention to your request.*
>
> *I send you a few trifling publications by myself. When finished, my Flora of the U. States, or rather of six of the states, and also my Geographical View of the Trees and Shrubs of North America, both of which are in the press, shall be forwarded to you. These works will be more interesting to you than any thing of my own now sent.*
>
> *Mr. Daschkoff, who is my near neighbour expressed much satisfaction in hearing from me, that you are engaged in writing the history of the Voyage of Captain* [Krusenstern]. *I regret that the American Government does not imitate that of your Country in giving the means of undertaking expeditions for similar purposes. Something, indeed, it has done in regard to the expedition of Captains Lewis and Clark, who have succeeded in crossing the continent to the Pacific Ocean. The history of this enterprising journey is not yet published, but may be looked for in the course of the ensuing year.*

1563 Barba de Moraes, *Brasil*; Bretschneider, *China*, 314–316; *TL-2*. Historians N. Nozikov, *Russian Voyages round the World...translated from the Russian by Ernst and Mira Lesser* (London & New York, ca. 1944), 1–75, and Terrence Armstrong in Robin Fisher and Hugh Johnston, editors, *Captain Cook and his Times* (Seattle, 1979), 121–128, provide valuable background; Nelson Papavero, *Essays on the History of Neotropical Dipterology with special Reference to the Collectors* (São Paulo, 1971–1973, 2 vols.), 1: 50–51; Wagenitz, *Göttinger*, 106; Roderick J. Barman, "The Forgotten Journey:...Langsdorff and the Russian Imperial Scientific Expedition to Brazil, 1821–1829," *Ann. Soc. Hist. Disc.* 3: 67–96, especially 71–74. Hans Becker, *Langsdorff* (Berlin, 1987), detailing Langsdorff's researches and misfortunes in Brazil (1813–1820), with portrait and illustrations.

1564 *Bemerkungen auf einer Reise um die Welt in den Jahren 1803 bis 1807* (Frankfurt-am-Main, 1812).

1565 Johann Georg Gmelin, *Flora sibirica* (St. Petersburg, 1749–1769, 4 vols.) is in Barton's library, PH.

1566 Is this the work which Tilesius also requested: André Everard van Braam, *Authentic Account*; see fn. 149.

Barton then writes of his dispatching Nuttall on a trip to the Northwest, and gives an account of his progress in the study of Indian languages—these accounts we have moved to those subjects. Barton continues his letter with the usual promises of returns.

> *I shall, at all times, be happy to hear from you, and to render you any services which it may be in power to render. Seeds of any of the vegetables of the U. States I can readily transmit to you, through the hands of Mr. Daschkoff, such American publications as may promise to afford you either amusement or information.*

He then requested seeds and bulbs, etc. for his Botanic Garden, concluding:

> *I learn from Pallas, that the south of Russia is very rich in the fine hexandrous plants. I am very anxious to see Lilium Camschatense,*[1567]
> *I am, Sir, with high respect,*
> *Your obedient & humble servant, &c.*
> *Benjamin Smith Barton*
> *1. Tulipa sylvestris*
> *2.—— celsiana*[1568]

Langsdorff replied:

> *St. Petersburg, August 10, 1812*
> *Sir*
> *The zeal generally known with which you embrace all that may contribute to increase the science and particularly that of natural history, emboldens me to offer you the first volume of my observations made during the voyage round the world*[1569] *under the command of Cpt. Krusenstern and the first bind of plants collected during the same voyage. I hope, you will accept this offer as a proof of attention that I bear many years ago to your learned Society & for several of your members I have the pleasure to know by there literary works, and I beg you to be persuaded that I am with the most perfect esteem Sir Your most obedient humble servant*
> *P.S. Pray to present my best compliments to Mr. Peale (son) whom I had the pleasure to know in London in the Year 1802.*
> [Addressed to] *Dr. Barthon Professor of natural history at the Pennsylvania University with this a paquet of books.*[1570]

Since he evidently had not received a reply from Barton he wrote again 1 December 1813 from Rio de Janeiro, where he was now Consul General of Russia. Again he commented on Barton's zeal and begged his acquaintance, suggesting exchanges:

> *...The enchanting nature has taken me many years with all her charms & it is for the science of natural history that I employ all my liesure time. I took the liberty of sending you by Mr. Harrison, last year a little publication: Collection de plantes recueilles pendant le voyage des Russes*

1567 [Now referred to as *Fritillaria camschatensis* (L.) Ker Gawl., Kamchatka Fritillary. IPNI. ITIS.]
1568 Barton papers, APS. [There is a *Tulipa celsiana* J. Henning described from Russia in 1823. IPNI.]
1569 Referred to again in the next letter as *Collection de plantes...*
1570 Barton papers, APS.

> *autour du monde;*[1571] *which I hope you received.—By the very good opportunity of my friend Mr. Jivaroth I take the liberty of sending you at present some insects from this country which I inhabit since this last eight months; I know a collection of plants would be more agreable to you, for I confess that the collecting I have made, is till now very inconsiderable, some fine species of different Filices* [ferns] *are the only valuable plants I have collected; for if I have the pleasure to be connected with your correspondence, then I will send you now & then dried plants.—You would oblige me very much if you would be so kind to send me some butterflies from your country, & you can depend upon it, that as soon as I know that you like best to have sended, you shall have it. I am ready to exchange for butterflies, other insects, bird skins, plants, &c. for I thinck this is the only way of getting a collection, without immense expense—I shall be very happy to hear soon of you, & have the honour to be your most obdt humble Servant.*
>
> *George de Langsdorff*
> [Addressed to] *Mr. Barton Smith Professor at Philadelphia.*
> *Received Sept. 13. 1814.*[1572]

By this time Barton was preparing for his European trip, he had assumed new obligations in the medical school, and his health was deteriorating.

A glimpse of Consul Langsdorff, not at his plantation "Mandioca" in Tijuca, but on Corcovado, comes from Henry Ellis while on a visit to Brazil enroute as commissioner with Lord Amherst's embassy to China:

> *On the 25* [March 1816] *we visited the Russian consul, Mr. Langsdorf—Mr. Langsdorf is well known in the literary world as one of the companions of Krusenstern—who resides during the hot season in a cottage near the summit of Corcovado Hill, vulgarly called Lord Hood's Nose. His object in selecting this situation is, both to avoid the heat and to pursue his researches in natural history. Uniting science with enthusiasm he never loses an opportunity of adding to his collection, and in the pursuit of his favorite studies he defies every species of fatigue and inconvenience.*[1573]

Río, Cervantes, and Ramirez

Don Andreas Manuel Del Río (1764–1849) was in Mexico City when he sent a box of silver ores, etc., from Mexican mines to Samuel Brown in New Orleans. Brown forwarded them 6 November 1807 to Barton at the American Philosophical Society, and they were reported at a meeting on 4 December 1807. Andreas Del Río was the author of *Elementos de Orictognosia, o del conocimiento de los Fósiles* (Mexico, 1795–1805, 2 vols.; Sabin, *Dictionary*, 41443, and listed are two other titles, 71442 and 71444).

Del Río is recorded as present at a meeting of the American Philosophical Society, 1 October 1830. At the next meeting, 15 October, he was elected to membership. Until 17 October 1834 there are several references to his attending meetings, and to two of his

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1571 Georg Heinrich von Langsdorff and Friedrich Ernst Ludwig von Fischer, *Plantes recueilles pendant le Voyage des Russes autour du Monde* (Tübingen, 1810) was not found among Barton's books. Considered in *TL-2*.

1572 Barton papers, APS.

1573 Henry Ellis, *Journal of the Proceedings of the Late Embassy to China...* (London, 1817), 5.

chemical papers.[1574] Río's letter to Barton is not with Barton's papers at the Society, but Barton's copy of this later letter reads:

> *Dear Sir,*
>
> *I am under many obligations to you for the valuable books, and interesting specimens and minerals which you have transmitted to me. May I beg of you to continue your correspondence, and the farther communication of the mineral productions of your most interesting country? I will endeavour to make suitable returns. At present, I have nothing of consequence to send to you. But I request you to receive, as an earnest of my wishes to contribute to your amusement, my paper on the Siren, or Proteus; and the supplement to my memoir on the fascinating quality ascribed to the rattle-snake. Of the memoir itself, I am not able just now, to obtain a single copy. In the spring, I shall send to you & to Mr. Cervantes, the new editions of two of my publications, viz: Elements of Botany, greatly enlarged; and the Views of the origin, languages, &c., of the American Indians.*
>
> *You will see, dear Sir, by my enclosed letter to my old acquaintance & friend, Mr. Remerez, how much I feel interested in whatever relates to the history of your country:—and may it be a happy country. Will you be at the trouble to convey my letter to Mr. Remerez. I shall be truly glad to hear from him, and I have no doubt that he will take an opportunity of writing to me.*
>
> *As my cabinet of minerals is not large, it will not be difficult for you to know what will be acceptable to me. In mineralogy, you are a master, I am merely an eleve. I am, Dear Sir, with very great respect Your obedient servant, &c. Benjamin Smith Barton October 28th 1810.*
>
> [P.S.] *As it is possible that I may not find time to write to Mr. Cervantes by the present conveyance, I beg you to present my high respects to him, and assure him, that I am thankful for his attention to me.*[1575]

Vincent Cervantes mentioned in the letter was Professor of Botany at the "Real Estudio de Botánica" in Mexico City at least from May 1788.[1576] Among his papers was "Discourso...en real jardin botánico de México" in Suppl. *Gazeta de Literatura* (Mexico, 2 July 1794), 35 p. 1 tab. (Pritzel, *Thesaurus*, 1639). Barton's copy of his letter to Cervantes is not with his papers, but Cervantes sent him a specimen of *Tuza*.[1577] Barton proposed *Tusa hernandisii*, writing that the "general appearance of this little animal is not unlike that of a mole or shrew."[1578] Cervantes sent specimens and seeds for Barton's botanic garden through Dr. Samuel Brown in New Orleans, as we relate in our account of Barton's Botanic Garden. Cervantes seems not to have been elected to the American Philosophical Society, and Del Río not until 15 October 1830.

1574 APS "Minutes," 604, passim to 659. Wm. T. Holser in *DSB* details his life, accomplishments, and discouragements. Del Rio was born in Madrid and studied in a number of European universities before coming to the Colegio of Mexico City in 1794 as the first professor of mineralogy. There he was visited by Humboldt. In 1829 in exile he fled to Philadelphia remaining five years. He also attended meetings of the ANSP and was elected president of the new Geological Society of Pennsylvania. He died in Mexico City.

1575 Barton papers, APS.

1576 Miguel Colmeiro, *La Botánica y los Botánicos de la Península Hispano-Lusitana* (Madrid, 1858), 119. W. H. Rickett, "The Royal Botanical Expedition to New Spain, 1788–1820," *Chron. Bot.* 11 (1947): 1–86. Ida Kaplan Langman, *A Selected Guide to the Literature on the Flowering Plants of Mexico* (Philadelphia, 1965), 196.

1577 [The Mexican Tuza is represented by *Zygogeomys trichopus* Merriam, 1895, also known as the Michoacan Pocket Gopher. MSW. WMW.]

1578 Misc. notes #4. Barton papers, APS.

listed then as Professor of Mineralogy at Mexico. He made a donation to the library 5 March 1819.[1579]

Alejandro Ramírez (1777–1821), while Secretary of the Guatemala Chamber of Commerce, travelled on behalf of the commercial house of Inismarri and visited Philadelphia. He attended a meeting of the American Philosophical Society where he probably met Barton, and to which he was elected 16 January 1801.[1580] After a visit with Barton he promised to send specimens, but it appears that political turmoil within this Spanish dominated country, which at that time comprised most of Central America, prevented Ramírez from fulfilling expectations. However, on 3 March 1803 he wrote from New Guatemala that he was not reinstated as secretary of the Presidency, that is *Capitanía general.* He thanked Barton for his part in his election to the American Philosophical Society.[1581] On 30 August 1811 he wrote from Guatemala promising to send natural history specimens despite the difficulties of shipping them safely. The Sociedad Patriotica de Guatemala, after having been suppressed by the government, was now re-established. He was concerned about his status as a member of the American Philosophical Society.[1582] Shortly after he was appointed *Intendente* to Puerto Rico, and enroute from Guatemala to Campeche he visited Palenque—so he wrote Barton 2 January 1813, Barton quoting from the letter when he wrote Tilloch about his own paper on Palenque.

Not until later was Ramirez able to send specimens. On 21 February 1817 the Society acknowledged a donation, and his *Eulogium* on Dr. Eusebio Valli, translated by Mr. Hall, was read and ordered for publication in *Port Folio.* On 17 July 1818 he sent a donation, unspecified, from Havana.[1583]

Caetano de Freitos

Soon after his return to Philadelphia and his election to the American Philosophical Society, Barton wrote to a contemporary student at the University of Edinburgh, Dr. Antonio Caetano de Frejtos, now established on the beautiful island of Madeira, off the coast of Portugal. Out of touch with British colleagues, Caetano had forgotten much of the English language. Years later Barton received a response:

> *Funchal July 7 1804*
>
> *Dear Sir*
>
> *Many years are elapsed without pleasure, or communicate you my news. I recolect to have receaved one letter from you, after I came to this island, but I was very unwell and very far from recovering as you knew me in Scotland, and London; afterwards I went to Lisbon where I passed some years: on that account I have not opportunity to written you; now I am settled at Madeira practicing medicine, and established Professor of Mathematics, if you wish any thing from this island or any of your friends, aply to me, you will immediately be served; and in case you will make any presentations of the productions of your country* [direct them to me who will be satisfied, and I will send a good exchange]. *I beg the favor of sending to me any black squirrel or Virginia bird, or any* [enviable] *animal of that country as well as some kinds of frogs, Toads, Serpents, infunded* [preserved] *in spirits of wine; the first I wishe in life. I will return you with*

1579 APS, "Minutes," 604, 485, and passim.

1580 APS, "Minutes," 308.

1581 BPL.

1582 BPL.

1583 APS, "Minutes," 469, 482. Biography, portrait, and list of writings of Ramirez in Héctor Humberto Samayo Guevara, *Ensayos sobre la Independencia de Centroamérica* (Guatemala City, 1972), 9–48.

productions of Angola, and Brasil that frequently are sent to me. I am very curious of natural history and wish to have a good collection; preferred always the animal in life when there is possibility to have them. I beg you particularly the favour of sent me all your publications on natural history. I read with great pleasure any in the journals, but I cannot find the means of discovering all, but by your favour. You may direct your letters to Mr. Francis Barreto my compatriot at New York, and, I will continue to direct myne that way. By the same chanel you will direct anything to me. I do not [know] *if you can understand my bad English but believe well the sincere expresions of friendschip of your friend*

Dr. Antonio Caetano de Freitos

[Barton:] *Received August 18th 1804* [and] *Nothing else*[1584]

Despite not receiving anything but promises, Barton sent copies of *Observations*, *Fragments*, and *Collections*. Caetano's pleasure was great. He promised "anything you wish from this island and Portugal," but made further overwhelming demands. He will be a subscriber to anything Barton publishes. He wrote again:

Funchal, March 18, 1805

Dear Sir

With the greatest pleasure I receaved your letter, and publications, which I have read immediately with extraordinary pleasure, and beg you the favor of sending to me, when it will be published the anatomy and Phisiology of Serpents published in one of your pamflet. In case you would publish anything by assignants you may account all ways with me. I am now established here, practicing Physic, and Professor of Geometry, by order of the Government. It is at present that I can with pleasure entretain with you a successive Correspndence; and that Friendship acquired in Edinburgh. Anything that you wish from this Island and from Portugal, aply to me, you will be obeyed and served in with the greatest pleasure. I wish at the same time you will send me any animals of that country; I prefer to have it in Life. You may recommend them well to the Captain of vessels, who will be compensated by me here. If it is possible to sent me a pair of Didelphis opossum, or any other species, any kind of Jerboa; viverra noxia, one American fox, Castor fiber [beaver, *Castor Canadensis*], *any species of monkies from both India and Africa, that may be got from the vessels that touch Philadelphia I shall be much satisfied with obtaining them and will pay his importaner, and the expenses. It seems to me that it will be a difficulty task to get thence those last; but sometimes it come from the South part some curiosity. Wat I imagine will be easier is to sent those from Pensilvania, and some fowls. like some kind of falco, and vultures and Quails etc. Concerning the passeres to not sent any; for three or four times I have been very unhappy with some (Turdus polyglotus* [*Mimus polyglottus*, Northern Mockingbird]*) and Loxia Cardinalis that were sent to me from New York: all died by the voyage, but the largest fowls arrived alive. My intention is to have a variety of animals in life, and I already have a great many. If you could sent to me a Fauna Pensilvania I will be much indebted to you as from any other part of the United States. Do not forget to procure the animals, and sent in every opportunity some well recommended to the captains of vessels. I take the liberty of ofer to you a*

[1584] Barton papers, APS.

quarter of a cask of our wine, and in the other opportunity I will sent to you some beter kind. I did not know that the vessel mean to set off today; if I knew it, I would have prepared some thing more to show you the productions of this Island. I beg you the favour, not to make with me any ceremony, and behave in the same manner, as I do with you, if you wish anything propose to me. I will do what is of your pleasure. I wish to receave your letters in every oportunity possible. I shall writte you more particularly in the first oportunity. Do believe me your most obliged and sincere friend The mark of the cask is Antonio Caetano de Freitos BSB your name

P.S. Sent me also some seeds of gardens trees and shrubs. Perhaps you will not understand my bad Inglish. I have almost forgot all that I knew.

[BSB:] *Received April 22d, 1805.*[1585]

Caetano wrote again 3 September 1806 lamenting that neither had written to the other. He had sent the two volumes of *Flora Cochinchinensis* (Lisbon, 1790) by João de Loureiro, but had not heard of its receipt. There survives a copy in Barton's library. Caetano requested in return a copy of Bartram's *Travels*, and specimens animal or mineral. Did Barton pass the requests for birds and other animals for the Funchal Museum on to Peale? On 13 January 1807 Caetano repeated his desire for Bartram's *Travels*, and felt certain that Barton had received the *Flora* he had sent. "Many vessels are arrived here from Philadelphia, but I have not received the pleasure of your letter." On 26 March Barton wrote himself a memo: "package put into Mr. John Vaughan's hands, March 27, 1809, addressed to Doctor Antonio Caetano de Freytos, Madeira, containing 3 copies of my Discourse." He was sending extra copies for Portuguese botanists who may be interested, in exchange for a few seeds. "You will see how intent I am upon the subject," he said of *Discourse*. He wished he could recall the name of the Portuguese botanist who had written on ipecacuana.

Caetano's last letter, dated "Madeira 29 of April 1811," mentions his sending only a small date palm and some poisoned arrows, but with promises of minerals and shells, and his own requests:

I have not recived any leter from you long time since; and in consequence have not writt you too but by a captain who set out from this island direct. Your one wish I am uncertain if has been received. In that leter I recommended to you Doctor Bondini resident at Canarian Islands he wishes to be a member of your Society of Philadelphia I suppose a good acquisition because he will sente you many productions of natural history. At present I sent you the Phenix dactilifera [date palm, *Phoenix dactylifera*] *you asked me. I had a large one ready but was dried I will continue to sent some more as well the fig tree but cant go by the present opportunity. I sent you some poisoned arroes from Guinee I have already a prety collection of mineralogy for you and some shells of different kinds, but I am to much busy that cant prepare them for the voyage it will be sent by one other oportunity I beg you the favor of sent me the diferent kinds of snaks that are found in that country as well frogs toads etc interred in spirit of wine I am preparing a collection of amphibia for my gabinet and you can convene much for it I present my best compliments to you, and remember equaly of your true friend Anto. Caetano de Frejtos*[1586]

1585 Barton papers, APS.

1586 Barton papers, APS.

Barton did not date the receipt of this letter, and it appears to have terminated the correspondence. Dr. Bondini does not appear to have been elected to the American Philosophical Society.

Marco Lastri of Florence answered a query of Barton's about accounts of Amerigo Vespucci in 1805.

Edward Stevens

Edward Stevens (1755–1834)[1587] is noted for the first isolation of human gastric juice. He was born and died on the island of St. Croix. His medical degree was from Edinburgh in 1777. Stevens had been president of the Edinburgh Royal Society, and won the Harveian Prize for an experiment on the red color of blood. Although he returned to St. Croix in 1783, he moved to Philadelphia in 1793, disagreeing with Rush over treatment of yellow fever. He was elected to the American Philosophical Society 18 April 1794, and he was present at a meeting 18 December 1795. After a short period at King's College (Columbia University) he was Consul-General at Cap François 1799–1800, then returned to Philadelphia. On 19 August he substituted for Latrobe as judge of Barton's dissertation on a new species of lizard, reporting its suitability for publication to John Vaughan.[1588] His last meeting seems to have been 24 February 1804. Stevens's interest in gastric juices may well have influenced Barton's pupil John Richardson Young in his choice of thesis topic (1803). Stevens's Santo Domingo natural history, to be a folio with water color drawings by Turpin, was announced in *Medical Repository* 5 (1803); 339–340, but not published. According to a letter from Hosack, in 1809 Stevens was on St. Croix.

William Jacobs

From former pupil William Stephen Jacobs came a letter in answer to a request from his former professor:

> *St. Croix* [Virgin Islands] *July 27, 1811*
>
> *Dear Barton*
>
> *It is a long time since I intended to have wrote to you, but sometimes the want of opportunity & sometimes want of liesure, has been the cause of so long a delay—*
>
> *I have by me, most of the articles you mentioned in your last letter to me & shall forward them by the first vessel for Philadelphia. Among others which I hope will please you, I have several Stone Hatchets, Some similar to those found in North America & others somewhat different. Several of them I saw myself taken out of the ground, in clearing wood land, for the purpose of planting it in canes—Do you think Magnolias would thrive in our Climate? If so send me a few of the seeds of the most beautiful species.*
>
> *Our friend the Doctor is in very good health, he has become a farmer or Sugar planter & has given up the profession entirely. Mrs. R*[oebuck] *was a few days ago delivered of her sixt child, so that he has a prospect of a very large family—*
>
> *The difference between America & England & particularly the capture of this Island has produced a very great change in our situation. Missing is easy sources of a sale for produce. Many of our planters are in a very bad way, the effects of which we feel most severely—*

1587 Stacey B. Day in *DSB*; Barnhart, *Notes*, 3: 327; Day, *Stevens*.

1588 APS archives, 1 p.

The bearer of this is a brother to John De Britton Your former pupil, he is also intended for the Practice of Physic–He has been some time in New York, Whether he has acquired such knowledge there, I cannot say, he was here a mild well disposed young man–

Present my best respects to Mrs. Barton & All enquiring friends
Your Obd. Servt.
Wm. S. Jacobs.
Favoured by Baron Frederic von Bretton."

Barton wrote on the address side of the letter:

Oct. 17, 1811. The Baron paid 100 dollars, on account of his fee, having agreed to become my pupil. The entire fee is one hundred pounds.[1589]

Other Correspondents

Several certificates of membership in the American Philosophical Society remain among Barton's papers, an oversight no doubt. Was it one more instance of Barton's overload? Peter Simon Pallas of St. Petersburgh had been elected in 1791. He was omitted from Barton's list. Zimmermann of Caroline College, Brunswick, had been elected in 1794, and Johann Reinhold Forster, elected as "Foster," in 1793. He had sailed as naturalist with Captain James Cook on his second voyage.

Among Barton's miscellaneous papers at the American Philosophical Society is:

A list of the principal of my foreign correspondents, since 1789:

1. *Thomas Pennant, Esq. Downing dead.*
2. *David Pennant, Esq.*
3. *Sir Joseph Banks*
4. *Dr. J. C. Lettsom*
5. *Mr. J. M. Good, translator and historian*
6. *J. Ed. Smith, M.D. etc.*
7. *Dr. Duncan, Edinburgh*
8. *Dr. Th. Garnett, England, dead.* [d. 1802]
9. *Dr. G. W. Maton, London* [transposition of initials, perhaps an American's familiarity with G. W.? = William George Maton, 1774–1835].
10. *Profess. Thunberg, Upsal.*
11. *Profess. Swartz, Stockholm*
12. *Professor Ebeling, Hamburgh*
13. *Profess. Reimarus, Hamburgh*
14. *Profess. Blumenbach, Gottingen* [crossed out]
15. *Profess. Zimmermann, Brunswick dead.*
16. *Mr. Cuvier, Paris*
17. *Mr. la Capede, Paris*

[no 18]

19. *Mr. Desfontaines, Paris*
20. *Mr. Mirbel, Paris*
21. *Dr. Albers, Bremen*

1589 Barton papers, APS.

22. *Prof. Tilesius, at St. Petersburgh*
23. *Prof. Zwoschke, at Mittau* [Johann Henrich Zschoke (1771-1808)]
24. *Prof. Fischer, Moskow, Russia*
25. *Prof. Vater, Koenigsburgh* [Johann Severin Vater, (1771-1876)]
26. *Dr. Grassi, Bordeaux* [Candide Frederic Antoine de]
27. *Dr. Vallentin, France* [Louis Valentin (1758-1829)Surgeon General]
28. [no entry]
29. *Dr. Martyn, Cambridge, England*
30. *Mr. Michaux, the younger, France*
31. *Robert Ker, Surgeon, Edinburgh*

These names were written on the reverse of an unused but soiled certificate of membership for the American Linnaean Society.

Chapter XIII

America's First Textbook of Botany

"Plants and animals constitute one vast series or family of beings, essentially distinct, and immensely remote, from minerals...But the Creator of the Universe has given to the plant and animal so many properties in common with each other, that naturalists are unable to tell, what are the exclusive characteristics (if such there be) of the one or the other of these organized beings."
—Barton in *Elements* (1803): [3]

Elements of Botany

Three primers titled *Elements of Botany* were published by three physicians between 1799 and 1836: by John Hull[1590] in Manchester, England, in 1799; by Barton in Philadelphia in 1803; and by Asa Gray of Cambridge, Massachusetts, in 1836.[1591] Today they are all but forgotten, even by most botanists. Hull's *Elements* is almost unknown. We have traced three copies in this country. Barton's *Elements* passed through five editions, all small printings by modern figures, the last edited by his nephew, W. P. C. Barton, published by Robert DeSilva in November, Philadelphia, 1836. Asa Gray's *Elements* had appeared in May 1836,[1592] the first book by one of our best-known botanists of the nineteenth century, and the first botanist enshrined in the Hall of Fame for Great Americans at New York University.[1593] It, too, is a rare book, sought by collectors as a landmark in American science. These three *Elements*, each designed to teach the rudiments of plant form and function, have similarities but as many differences. The *Elements* of Hull and Barton were alike in being published in two volumes, illustrated by sixteen and thirty plates respectively, which explained the parts of the plant and the terms for each part. Both adopted the sexual system of Linnaeus, an artificial method based on the "numerical relationships of the sex organs,"[1594] stamens and pistils of the flower, a system that had been valued for half a century for its usefulness in introducing the beginning student to distinguishing different species. This system survived in this country until 1840, having been adopted by Thomas Nuttall as well as by Amos Eaton and his students.[1595]

1590 John Hull, 1761-1843, a native of Lancashire, M.D. Leiden, 1792. There is no record that Barton met Hull and no letters between them are known. As a one-time member of the Natural History Society of Edinburgh, Hull may have learned of Barton's years there.

1591 John Hull, *Elements of Botany* (Manchester, 1799, 2 vols.); Benjamin Smith Barton, *Elements of Botany* (Philadelphia, 1803, 2 parts); Asa Gray, *Elements of Botany* (New York, 1836). See *TL-2*.

1592 That these two texts appeared the same year has escaped notice. Was W. P. C. Barton moved to bring out his revision of the *Elements* in competition with Asa Gray? Gray's letters in Graustein, *Nuttall*, and Dupree, *Gray*, do not mention the close publication date.

1593 Asa Gray was elected to the Hall of Fame for Great Americans in 1900. The next botanist elected, in 1977, was George Washington Carver, c. 1864-1943. The first African American enrolled at the Iowa State College of Agriculture and Mechanic Arts (now Iowa State University), Carver later taught at Alabama's Tuskegee Institute. His work on soils and crops resulted in the creation of more than 325 products from peanuts and hundreds of others from plants native to the South. (Iowa State University Library.)

1594 G. H. M. Lawrence, *Taxonomy of Vascular Plants* (New York, 1951), 24.

1595 Thomas Nuttall, *An Introduction to Systematic and Physiological Botany* (Boston & Cambridge, Mass., 1827), *An Introduction to Systematic and Physiological Botany*, ed. 2 (Cambridge, Mass., 1830); Amos Eaton & John Wright, *North American Botany* (Troy, N.Y., 1840).

Nuttall's textbook came out in 1827,[1596] the same year in which John Torrey first published an important paper using the natural system, which had been sponsored by de Candolle abroad. Barton admitted the limitations of the sexual system when he wrote in his *Discourse* (1807), "I am far from being a blind idolater at the shrine of Linnaeus. I am not ignorant of the imperfections of his System, or of the errors into which he has often fallen," adding, "these errors, I say, must be acknowledged to be few in number."[1597]

Another common feature of Hull's and Barton's *Elements* was the tables of schemes of plant classification presented as appendices. Hull offered twenty-three schemes and Barton included seventeen tables in nearly identical format in what may appear to be piracy. Barton, however, commented in the preface (pp. xi–xii) that "after I had made considerable progress in my work, Dr. Hull's *Elements of Botany* fell into my hands," but he wrote that Hull had not identified the sources of the tables he used. Barton included biographical notes about the several authors of the schemes he used. In short, both Hull and Barton used tabular material from unidentified authors, Barton selecting some examples independently of Hull.

Barton's *Elements* differed from Hull's in having 112 references throughout the text: thirty-four to English authors, twenty-six to French, and fifty-two to Latin and others. Another distinction was Barton's many references to his pupils' theses, those of Charles Duvall, George Thomas, Charles Morris, Patrick Rogers, and Thomas Price among them. Such acknowledgement certainly earned the approval and support of his medical readers. He expressed his gratitude for the "kind liberality of William Bartram" and his drawings.

Barton dedicated his *Elements* to his "students of medicine and to lovers and cultivators of natural history in every part of the United States." Although Barton enjoyed mineral collecting and Indian language studies, he remarked that "particularly Zoology and Botany have been my favorite studies, from a very early period of my life...the happiest of near sixteen years of cares, difficulties, or of sickness, have been devoted to the cultivation of these interesting sciences." Sixteen years from his unhappy days at Edinburgh! Over the years he had been gathering news and views on native trees, immigrant weeds, herbs, their folk names, plant uses of Indian neighbors and settlers, woodsmen, longshoremen. Barton always stressed the potential the plant held for building homes, curing ills, firing stoves, and feeding Americans and their animals. Always America. His *Elements* included chapters on plant physiology, chiefly observational, the sorts of lore that William Smellie had apportioned to his *Philosophy of Natural History* (Edinburgh, 1790–1799, 2 vols.). The *Elements* provided interesting reading for the soil relations of plants, germination and pollination, and, always, materia medica.

From his boyhood Barton had learned the common names of plants while on walks with his father in Lancaster. He had missed botanical training at Edinburgh since Professor Hope was at the end of his teaching career. Back in Philadelphia he soon appreciated the knowledge and inspiration of his friend of earlier days. On 20 September 1791 after requesting Bartram to send roots and an account of *Podophyllum diphyllum* to him, since he was planning to publish an account, Barton sent him the Smellie edition of Buffon's *Natural History of Quadrupeds* as "a very small present.—I wish it were more deserving of your acceptance." Barton did not agree with Buffon's declaration that American animals were smaller in size and intelligence! Bartram replied with thanks and the desired roots, and hoped "Your College & Physicians would attend to & encourage or promote the Analysis of our Vegetables of medicinal powers &c."[1598] Was this one stimulus for Barton to consider his *Collections*? And had he found in teaching his medical pupils that they would benefit from a broader botanical

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1596 Later, Nuttall acknowledged "I do not yet, for the beginner, know of any substitute for the Linnaean system; and, indeed, its general prevalence to the present time, after so long a trial, is almost a tacit acknowledgement of its convenience, if not of its superiority over other systems," *An Introduction to Systematic and Physiological Botany, ed. 2.* (Cambridge, Mass., 1830), vi.

1597 *Discourse*, 72. Rudolph, "Natural System," 461.

1598 Barton papers, APS.

understanding to make wiser use of materia medica? And was it not in a measure to compensate for his own lack of botanical training?

Now that since 1797 he was teaching materia medica, he saw the need for a textbook for America along the lines of the several introductions to botany that had appeared in Europe. There was also the response to his natural history classes, and so he organized his notes on plant physiology, anatomy, anthesis and phenology. To illustrate these topics and especially classification, he planned about sixty figures arranged as thirty plates, adding ten to the second edition.

"No man could become a nice, discriminating, and eminent botanist, without possessing that acumen in perception of proportion, colour, harmony of design, and obscure differences in the objects of the vegetable world, which alone belongs to the eye of the painter." This was Barton's view as related by his nephew, W. P. C. Barton, in his biography of his uncle.[1599]

If there was any question as to Barton's favorite science, his *amabilis scientia* would be shown by the effort he made to arrange for plant illustrations as contrasted with his relatively smaller effort for zoological drawings. His own drawings were not primarily botanical. In 1785 they were of fossils, and undated, an anatomical drawing of "Siren lacertina" associated with his paper of 1808. His few non-botanical artistic efforts are considered under their particular subjects elsewhere in this book.

Barton turned first to William Bartram, whose fine artistic work he admired. Bartram may have shown him his drawing of *Cineraria*, which Hamilton of "The Woodlands" had pressed him to come and draw when he wrote 31 July 1796:

> *I must beg the favour of you to make a Sketch of the Senecio nova, floribunda as it now blooms in my Hot House. For this obligation I will make you any compensation in my power. After this day it cannot be done this season as its beauty is already on the Decline.*
>
> *I have moreover in my Hands at this moment just arrived from England near 100 colour'd plates mostly of new plants (some of them from Botany Bay) which you ought not to lose the opportunity of viewing & they are immediately to be returned to the gentleman who left them here. I hope therefore you will oblige yourself as well as me by coming here as soon as you can after receiving this & that you will come prepared to make the sketch I have requested, in which I am more interested for the honor of american gardening than you are aware of. I have seen a figure & description of this plant as it flowered last season for the first time in Europe under the name of Senecio Chrysanthemum*[1600] *by which I find it flower'd with me before it was known in Europe. I am dear Sir truly your Friend & humble Servt*
>
> *William Hamilton*[1601]

By 1800, plans for the *Elements* were under way, although there were delays. On 3 April Bartram wrote from Kingsessing, "Believe me when I tell thee My Heart leap't with joy when I saw the lad coming down the avenue to the House. Thy note reliev'd me from much anxiety, fearing sickness and misfortune, not seeing nor hearing from You so long. Sympathy is the best substitute, or representative of an absent friend. Hope's the last resort." He also reported that "the Horse-tail Tree is in flower, its fructification is very singular." He was writing of the She-oak or Australian pine, *Casuarina equisetifolia*, which bears a singular miniature cone, though he evidently did not draw it. A short time later he wrote:

1599 W. P. C. Barton, *Port Folio* (1816), 275; in *Elements*, 13.

1600 [This might refer to *Senecio chrysanthemifolius* Poir.]

1601 Jane Loring Gray, *Autographs*, 3:18. HUH.

Health and Prosperity

Well—I have begun the Drawing of the curious aquatic plant which Thee requested me to make, from the specimens, we gather'd yesterday; and have gone through with the most interesting part of the Fructification, as well as several views, & states of the corolla, & most fortunate it is that I began immediately since there is reason to apprehend that there will be few, if any more flowers this season. for I find no Flowers today, but in searching for them I found that abundance have perished, as it were in embryo, under water. Yet was so lucky as to find an adult Flower, considerably advanced towards maturity. The Corolla (or periauth) may be with propriety termed permanent; retaining the same vivid color & succulency, closely shut up, forming a vaginum or case, which closely embraces the germen which appear to be so many separate seeds of this Figure & size. If we should find no more flowers am in hopes of being able to finish the drawings to your expectations.[1602]

This was *Hipparis vulgaris* L., common Mare's tail, shown on pl. VIII, fig. 3, of *Elements*.

Time was of the essence. Bartram, of undoubted skills in illustration, was nearing sixty-four, and his eyesight had deteriorated. Could he be persuaded to draw an example of each of the Linnaean classes from fresh material from his own or Hamilton's garden? The sixteen known letters that passed between Barton and Bartram over the next seven years were essentially progress reports. In *Fragments* Barton had been alert to waves of anthesis about him. He had noted Yellowroot[1603] in flower in Bartram's garden 15 April 1791, and later Barton was to borrow from Dr. Wistar the drawing by Bartram that was used in *Elements* as pl. XII.

Typical of Bartram's style and content is *Sarracenia purpurea*, the frontispiece to *Elements*. This common Pitcher-plant was known from 1640, when John Tradescant took living plants from Virginia to John Parkinson.[1604] Nearly forty years before that, Clusius had published a drawing of the detached leaf taken to Lisbon, the drawing republished in *The Herball...enlarged and amended by Thomas Johnson* (London, 1633), on the hope that its source and true nature would be recognized. Tradescant, then, first made known the whole plant. Bartram had sketched the carnivorous plant for Dr. Fothergill probably in 1774, including it with the drawing of "The Sarasena with a large yellow flower, call'd Trumpit leaf in Carolina," *Sarracenia flava*.[1605] Bartram's drawings of later years carry an intimacy, since he had closely noticed the attitudes of the plant as well as its structures. His lines are delicate, even thin, and do not assert, but inform. There were delays. On Monday 13 July 1801 Bartram wrote:

My worthy friend

...I have not yet done much for you my friend having been lately been ill, but am now On the recovery. When shall resume. The new Veronica for Cl. Diandria, will I think please you.

Hope soon to see you here. Pray My regards & esteem to Your worthy Lady Am with every consideration Of Esteem &c[1606]

1602 Barton papers, APS.

1603 *Xanthorhiza simplicissima* Marshall, 1785. *Elements* listed *Xanthorhiza apiifolia* L'Hér., 1788, known to William Bartram before Marshall cultivated or described it in 1785. Bartram's specimen cited in Ewan, *Bartram*, 161.

1604 Ewan & Ewan, *Banister*, 210–211, for history.

1605 Uncolored proof and a colored copy preserved among Barton papers, Folder VI, pl. 31, APS. See Ewan, *Bartram*, 61, Pl. 22.

1606 Barton papers, APS.

The messenger who delivered the note the same day was James Howell Bartram, son of John Bartram, Jr. He became a pupil of Barton's and a ship's surgeon. The drawing of *Veronica* was reproduced as pl. IX, fig. 2, in *Elements*. The only known drawing by John Bartram, Jr., *Hymenocallis* is reproduced here as Figure 41.

Barton fully appreciated the skillful treatment of his subjects. On 8 August 1801 he wrote "I have received the drawings, which you sent in by James. They are beautiful and quite to my satisfaction. They will add greatly to my work. I am extremely unwilling to be troublesome to you. But I take the liberty of saying, that drawings of the [following] will be highly acceptable to me." He then proposes illustrations of various classes and orders. "I leave you to select the subjects, as you may think proper.—that you think best to be done I am sure I shall also think so. On Monday the engraver is to begin with the beautiful little Aesculus. I think this a very happy illustration of the 7th class."[1607] "Aesculus parviflora of Walter [White Buckeye]" was illustrated on pl. XV, *Elements*. Bartram answered the same day:

> *My Worthy Friend*
>
> *James handed me thy favour of 8th Inst. thy commendations thou has bestowed on my poor performances are pleasing to me because they answer thy expectations; & I shall yet indeavour to deserve thy esteem & favour. I send now another halfsheet, hope the drawings will meet thy aprobation.*
>
> *I will pay every possible attention to the subjects mentioned in thy last, some I believe are past flowering. Collinsonia is not yet in flower, but shall attend to it.*
>
> *My Dr friend Thee obligest us all in bestowing so much attention & favour to the Young Man, Jamme, I pray he may endeavour to deserve it. I am thy Obliged Friend*
>
> *Aug. 8 1801, Willm Bartram*
>
> *P.S. Take care of thy health. I hope thy little dear* [Sarah] *is better. When will thee come, we wish to see thee here.*[1608]

The *Collinsonia* became pl. IX, fig. 3, in the *Elements*.

Although Barton requested a drawing of the purple flowering raspberry at one time, it, among others, is not in the portfolio that has come down to us. Barton had written "You have been so good as to promise to make for me a drawing of Rubus odoratus. For this I shall be greatly obliged to you. If the drawing is made large enough to occupy one whole plate, I shall prefer it. A back (as well as front) view of the flower will be useful. It will show the calyx. One or two leaves may be exhibited." His letter continues "I wish you would think of some triandrous plant for me. How would a drawing of the native Commelina do? Mollugo verticillata, wh. is now in flower, is a fine illustration of Triandria Trigynia." Barton also suggested that *Passiflora incarnata* was now in flower. "Saggitaria will finely illustrate the class Monoecia; also Acnida cannabina for Dioecia. Excuse the trouble I give you. I shall, at some future period endeavour to make a return for your aid & important attention to my work."[1609]

Illustrated were *Commelina virginica* pl. X, fig. 1.; Purple Passion flower, *Passiflora incarnata*, pl. XXV; Arrowhead, *Saggitaria sagittifolia*, pl. XXVIII; and *Acnida cannabina* (*Amaranthus cannabinus*), pl. XXIX, figs. 1 and 2. Bartram answered Barton's request 23 August 1801:

> *Worthy friend*

1607 Bartram papers, vol. 1 p. 13½, HSP.

1608 Barton papers, APS.

1609 Bartram papers, vol. 1, HSP.

I rec'd thy esteemed favour by Jammy, & shall with great pleasure attend to its requisitions; most of the articles mentioned that thee wishes to have drawn are within my power to obtain except Pass[iflora] *incarnata, which shall endavour to get from our Friend Hamilton.*

James will take thee some fruit of Staphylea. I have two half sheets nearly completed, which will be ready in a day or two.

My Dr frd. dont be afraid of troubling me by your friendly requisitions, for intirely to silence such complaints they are intirely agreeable to me, & add greatly to my pleasure & health,

You are good to Jamme, I wish he may be of service to Thee to repay in some part Your Friendship and paternal care to him.

We will be much gratified by a visit from you as soon as convenient. With every friendly consideration ...[1610]

The Purple Passion Flower (*Passiflora incarnata*) had been blooming in William Hamilton's garden. The drawing of Bladder-nut, *Staphylea*, was not used. One senses from Bartram's letters, this one particularly, that he appreciated the respite from the necessary farm toil that was his life's mainstay. Barton's recompense seems to have been made in gifts of books, the titles not always recorded.

Health & prosperity

I received thy Note fm. Jammy, together with the Valuable Volumn for which please accept my sincere thanks. & I hope shall have time to peruse it after a While I shall attend particuarly to Your requisitions Yr note concerning Illustrations in Class Cryptogamia &c.

I send per James with this 3 drawings No. 1. 2. 3. No. 3 appeared to me a New Genus, nearst Scariola[1611] *& Hyoseris but I think its neither of them. I am my good frd. Yours &c.*

27th Septr. 1801

Wm. Bartram[1612]

Bartram's "new genus" is *Krigia*, and his drawing was reproduced as pl. XXII, Barton suggesting *Tragopogon virginicum* [*virginianus*].

Trouble with Bartram's eyes caused a delay for several weeks. Barton wrote him 24 October 1801:

Saturday 24

My dear friend

I am exceedingly happy to hear that you are considerably better...Although very anxious that my Elements should derive every advantage from your masterly pencil, I beg, that you will not attempt to do any thing at the drawings until you should find yourself quite recovered. I had much rather that my work were defective, than that your health were in the least, injured in my behalf.—Believe me sincere in what I say.

Your plate of Sarracenia is pretty far advanced, under the hands of the engraver. So, also, is the plate of Tobacco, Convolvulus, &c. Most of the other plates are in hand. I have mentioned to James, that did your health & time permit, I should be happy to have a drawing illustrative of the order Monogamia, in Syngenesia.—As the Lobelia Cardinalis has been often

1610 Barton papers, APS.

1611 [Now *Lactuca* L., Asteraceae. IPNI. TROPICOS.]

1612 Barton papers, APS.

figured, a drawing of this plant would be of less consequence than one of Lobelia siphilitica. Impatiens noli tangere, or some of our fine species of Viola.–Do we not sometimes find, at this season, some of the spring Violets in bloom? But I can much better do without any drawing to illustrate Syngenesia Monogamia than I can do without other drawings, which you have kindly promised to do for me,–...God bless you.[1613]

Tobacco and Field Bindweed, *Convolvulus*, appear on pl. XI. Barton had also included a note on James's promise as a medical pupil. "My opinion of James is in no way altered. He is a young man of great merit. He will be an honour to me, & I hope a blessing to his family." James did not succeed in getting his medical degree, but served aboard a ship as surgeon. Bartram's answer the next day was written for him by Nancy, Barton noting the date "October 25th 1801."

My Worthy Friend

I received your note by James this morning but was not able to read it therefore got my niece to read it for me. I observe you requested me to draw a species of lobelia as an illustration of class Syng. Monogamia. But my Dear friend the exceeding painfulness and weakness in my eyes prevents me that pleasure and indeed I am fearful I shall no more be able to make poor drawings for your amusement. I thank you for the concluding paragraph in James's favor sincerely hoping that he may by his obedience and assiduaity continue to merit your regard. I am with every sentiment of esteem and consideration yours,

Sunday evening
Willm Bartram[1614]

There was not a gap in the correspondence, and although Bartram was unable to draw, he contributed observations:

Health and prosperity

I received Your Note early this morning, requesting specimens of Roots. I emediately went in search of them with your Young man; & after traversing Wood & fields, & afterwards the Garden, & shores of the Schuylkill have collected all the sorts that I could recollect. You will find amongst them a variety of Ramose & fibrous Roots, & fine specimen of the R[adix] *granulated, it is a Phaseolus or Glycine* [soybean] *I suppose. If you had apprised me some time before your demand should have been able to serve you better.*

Of the squamose bulb Lillium. You will perceive the striking difference between L. superbum & L. canadense the yellow root is the specimen of a later species. I am with sincere regard, Your obliged friend

Monday morning
May 25 1802
Wm. Bartram[1615]

I hope Jemmy continues to deserve Your Regard & esteem Please my regard to him–, When are you coming. [A series of bulbs and roots appeared as pl. II.]

1613 Bartram papers, Vol. 1, HSP. Copy APS.
1614 Bartram papers, Vol. 1, HSP. Copy APS.
1615 Bartram papers, Vol. 1, HSP. Copy APS.

On 30 December 1802 Bartram acknowledged what appears to have been a Christmas gift:

> *Respected Friend, I received your inestimable present by way of James. The Portrait is an elegant piece of painting and a perfect & admirable likeness. I have now by your image allways present, either before my eyes, or engraven on my Heart or both at once.*[1616]

Although most of the planning for illustrations was done by correspondence, there were unrecorded visits, though few, and usually by Barton, for he regularly took his pupils to study the garden plants once or twice each session.

"So very fine is the workmanship of these original [Bartram drawings] that a museum expert had to be called in to determine whether they were drawings or copper plates."[1617] Bartram had begun drawing birds at fourteen years of age, turning to plants in his later years, and continued to draw past the age of sixty-three. From the travels he and his father made from northern New York State to Georgia, seeds and roots were planted at their garden, and the vitality of Bartram's drawings comes from his direct observation of living or freshly gathered specimens.

Bartram's own botanical explorations began in the decade of the 1770s. Frenchmen soon followed in his paths, although they have seldom left any signs of having taken their cues from him. André Michaux recollected plants at Bartram's classic localities and passed seeds and plants to J. M. Cels, in whose Paris gardens they flourished. Étienne-Pierre Ventenat then published the novelties that he had seen in Cels's garden in his handsome folio, *Description des Plantes nouvelles ou peu connues* (Paris, 1800–1803, 10 fascicles), extensively illustrated by the Redouté brothers. Therein first appeared the description and a fine plate (pl. 22) of Bartram's *Illicium parviflorum* although Bartram had written of its distinction years before in a communication to Dr. Fothergill. Likewise, the Tarflower *Befaria racemosa* was published by Ventenat in 1800 (pl. 41), although it had been drawn in color by Bartram from his journey to Georgia and northern Florida a quarter century before. Ventenat's text ascribes the source as seeds from Charleston by the French naturalist Louis Augustin G. Bosc a few years prior to its announcement as new. Barton had in Bartram, therefore, an accomplished botanist as well as artist to contribute illustrations, not only to *Elements*, but also his projected "Flora."

A William Bartram drawing in Barton's collection gives us a good example of the difficulty in establishing the first collector and date of the first collection of a particular plant, when and where the species was first grown in cultivation, and the first illustration, published or unpublished. *Aralia hispida*,[1618] published by Ventenat in 1800 (pl. 41), is said to have been first collected by André Michaux between Quebec and Hudson Bay. This would therefore have been Michaux's trip of August 1792. Ventenat says that the plant was introduced into cultivation by Cels in 1797. We have, however, before us an unpublished Bartram drawing with a legend of the plant parts illustrated (7 small figures), but with no accompanying information as to its source. Now, was Bartram's drawing from fresh material growing in the family garden, possibly from seed or plants brought back from an excursion? No mention of the Bristly Sarsaparilla *Aralia hispida* appears in the Bartram journals. We conclude that it was collected by Michaux, and that Michaux gave Bartram the opportunity to draw it for Barton.

John Lyon, however, is credited with its introduction by *Botanical Magazine* in 1808, but there is no mention of the *Aralia* in Lyon's journal although "Aralia hispida (curious)" appears in his sales *Catalogue of Plants* (London, [1812]).[1619] Did Bartram then learn of this species from Lyon's growing garden? And possibly obtain a plant or seeds from him for his own living

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1616 Barton papers, APS. Which portrait is unidentified.

1617 [Emily Read Chestou], *John Bartram, 1699–1777: His Garden and His House.—William Bartram 1739–1823* (Philadelphia, 1938; ed. 2, 1953), 24.

1618 Barton papers, APS. Folder X, item 38.

1619 Ewan & Ewan, "Lyon."

collection? Aiton's *Hortus Kewensis* (London, 1789, 3 vols.), so widely quoted by garden historians, curtly informs us that it was "Introd. 1799, by Messrs. Loddiges." We know Loddiges Nursery, enthusiast for American "exoticks," was in touch with both Lyon and Cels. Or was it possibly an earlier Bartram discovery, antedating Michaux, but not published? *Aralia hispida* is generally distributed in Pennsylvania and would most probably have been noticed before Michaux's first collection of 1792. There is, however, no mention of this Bartram plant in Thomas Martyn's edition of Philip Miller's *Gardener's and Botanist's Dictionary* (London, 1807, 2 vols.), which over the years had chronicled Bartram's introductions.

Testimonial of Bartram's assistance appears in the Preface of *Elements* (1803):

> *The greater number of the plates...have been engraved from the original drawings of Mr. William Bartram of Kingsessing... While I thus publicly return my thanks to this ingenious naturalist, for his kind liberality in enriching my work...I sincerely rejoice to have an opportunity of declaring how much my happiness in the study of natural history has been owing to my acquaintance with him; how often I have availed myself of his knowledge, how sincerely I have loved him for the happiest union of moral integrity, with original genius, and unaspiring science, for which he is eminently distinguished.*

One botanical drawing came from Matthias Barton with an undated and hurried note: "I send you a rough unfinished drawing of a Plant which I found on the Bank of our Creek, Connistoga, a few days since.—Yet it is accurate, I have not at this Time any Thing to send you worthy of Notice—Yours Sr. M. B."[1620] The drawing is a watercolor of Bottle gentian [*Gentiana*] (Figure 94).

Plant physiology as a subject is notably absent from *Elements*, although Dr. William Barnwell in May 1801 had discussed with Barton the effects on plants of different climatic conditions, and at Barton's request wrote a long letter containing his observations. At a January meeting of the American Philosophical Society, Barnwell was elected to membership, no doubt having read his paper, a copy of which he donated 15 January. Barton published the letter in his *Philadelphia Medical and Physical Journal*,[1621] but it seems not to have influenced either *Elements* or *Geographical View*.

Elements[1622] was printed for Barton by William F. M'Laughlin. A surviving proof shows Barton's concern for the decoration of the page. On page 72 a row of eight asterisks is marked "dont look well I leave the improvement to Mr. Fry."[1623] "Part One" of *Elements* was presented to the American Philosophical Society on 1 April 1803. "Elements 2nd part" was received by the Society on 15 July 1803.[1624] A receipt from Thomas De Silva dated 11 July 1803 for binding fifty-one copies at 13 cents each indicates that these two parts were issued at the same time.[1625] They were sold for six dollars per copy.[1626] Jefferson had wished for his *Elements* delivered unbound, but was informed that "Mr. Barton's botanical book is not to be had in sheets."[1627] Disappointed that it contained no index, Jefferson set out to construct one for his own copy, perfecting it through the letter K.[1628]

1620 Barton papers, APS.

1621 *PMPJ* 1 (1804) Pt. I: 67–72.

1622 McPhail, *Barton*, 4–6, gives bibliographic detail.

1623 Barton papers, APS.

1624 *Proc. Amer. Philos. Soc.* 22 (1835): 336, 340.

1625 Barton, miscellaneous papers, Receipts, Box IV, APS.

1626 Barton to T. J. James, 9 May 1805. Barton, miscellaneous papers, Receipts Box IV, APS.

1627 Sowerby, *Jefferson's Books*, 482. Joseph Priestley received Part One, at Northumberland, Pennsylvania, 15 May 1803. "I shall long to see your second part." Barton papers, f. 54, 58, HSP.

1628 Jack McLaughlin details Jefferson's method in *American Heritage* (July–Aug. 1991): 87–88, illustrated.

The first edition of *Elements* probably consisted of three hundred copies, if we take the record of the second edition as evidence. Following the first edition, Barton was busily engaged botanically first with Pursh, then Nuttall, with some of the Lewis and Clark collections, and with his own various projects in zoology, particularly with reptiles and amphibia. Plans for additional plates for the second edition and for his "Flora" proceeded slowly. William Bartram was able to contribute information, but no longer any drawings. Barton turned now to the refugee French artist, Pierre Jean François Turpin (1775–1840). He had been taught something of tropical floras by the director of the Botanical Garden in Haiti, Pierre Antoine Poiteau (1766–1854), with whom he fled to Paris with a stop in Philadelphia late in 1801. Turpin began to draw for Barton in 1803, then returned to France with Humboldt in 1804.[1629] For the most part he drew plants from Philadelphia gardens, including the "new species" *Sambucus pubens* that André Michaux published in his *Flora*. In the course of his career, Turpin painted over 6,000 watercolors on velum for Humboldt, de Candolle, and Duhamel, among others. Some were engraved by Auguste Plée who had also visited the West Indies.[1630] Only one plate in *Elements* bears Turpin's name, Plate XXVI of *Acer* and *Betula populifolia* Marshall. Turpin, back in Paris, since he was unable to find *Comptonia* of Class XXI, Monoecia triandria, substituted a representative of the same class, *Betula populifolia* of Monoecia tetrandria, but Barton neglected to change his text. Of the forty-eight drawings by Turpin among Barton papers at the American Philosophical Society, we reproduce nine.

Barton wrote to Turpin 25 April 1805 "I beg you to consider me as a subscriber to your plates of the plants that grow about Paris," and referring to his own projects, "I am very anxious to receive the plates &c, about which I wrote you. I wish, as I formerly told you, the plates to be executed in a capital manner. I will pay the amount agreeably to my former promises." On 1 August, however, Turpin replied that it would be difficult to fulfill Barton's request.[1631] That Barton planned to use colored plates in that edition is suggested by Turpin's letter to Vaughan 10 May 1806, which stated, in part, "I have already informed Dr. Barton that I could not get the plates of his Elements of Botany colored to please me." Turpin was an associate of André Thouin, who was a friend whom Jefferson had met in Paris, and a correspondent of Hosack in New York. Thouin wrote Barton from Paris 28 September 1815 of a young artist whom he recommended as welcoming engraving work. The letter had been addressed to Philadelphia while Barton was in England, and so he may never have seen it.

Trenchard, Seymour, and Shallus were the engravers with whom Barton worked. Edward C. Trenchard (c. 1744–1824), born in Salem, New Jersey, with his uncle James Trenchard founded a short-lived academy of painting in Philadelphia known as the Columbianum. He was associated with both C. W. Peale and William Bartram. Joseph H. Seymour appears in *Elements* as engraver for plates drawn by Bartram. Both Samuel and Joseph H. Seymour were working in Philadelphia at this time. Samuel later accompanied the Long Expedition. Receipts survive for payments to Joseph H. Seymour for "engraving and polishing copper plates" for Venus fly-trap [*Dionaea*], 17 June 1801, for $8.50, and of Glade Mallow, *Napaea dioica*, 5 November 1801, for $7.00.[1632] François Shallers, a native of Philadelphia, was also active as an engraver from 1797 until his death in 1821, but in his lifetime he was also known as an author, politician, and, following the example of his father, was active in militia. Shallers engraved and polished copper plates of Horse chestnut, *Aesculus hippocastanum*, pl. XV, 17 August 1801, and a sunflower, *Helianthus divaricatus*, pl. XXIII, 30 October 1801, among other items for Barton.

T. & J. Swords of New York, "Printers to the Faculty of Physic of Columbia College," David Hosack's publisher, was addressed by Barton through T. J. James, in response to their order:

1629 Turpin wrote from Bordeaux 1 August 1804 to John Vaughan of his safe arrival and his intention to attend closely to commissions for the Society. Archives, APS. *TL-2* for both Turpin and Poiteau.

1630 Auguste Plée (1787–1825) of Muséum d'Histoire Naturelle, Paris. *TL-2*.

1631 Barton papers, HSP.

1632 The engravers appear in Groce & Wallace, *Artists*.

I send you 4 copies of my Botany–N.B. They are all perfect except that they want title in part 3d. The other 7 copies which you have ordered, shall be forwarded by an early conveyance.

The only booksellers into whose hands I have put the work are allowed by me one copy for every six which they sell (the selling price being six dollars). I am paid regularly every six months. For cash, remitts to me immediately. I will provide you with what copies you may want, allowing you one copy for every five copies. The work having been extremely expensive to me, I find it necessary to ask for payment, as early as convenient. But suit yourselves in regard to the two propositions I have made.

My work on animals and vegetables will be put to press so soon as I receive the plates which have been engraved in Paris. Of these plates I am in daily hopes of receiving advise.

I thank you for your attention to the package, which you have put on board the Huntress. I am, Gentlemen, with much respect, Yours, B. S. Barton. Phil. May 9th 1805[1633]

Such terms as Barton proposed were not always to the liking of dealers. Collins and Perkins wrote:

New York Oct. 22 1808

Collins and Perkins

Respected Friend

We are duly favored with thy answer to our Letter, and in truth could not immediately make up our minds on the subject of thy terms.

We need not disguise that like all others in the trade we carry on our business with views of pecuniary emolument, and we can hardly find within ourselves sufficient public spirit or liberality to take the trouble of purchasing and selling books when that object is not attained.

Not an instance has occurred since we have been in business where terms so unfavorable have been proposed to us as those received from our respected correspondent–The discount of one sixth thou observest is that which thou hast ever given to the booksellers of Philadelphia. These applications to thee have no doubt always been from persons who had an order for one of thy books. Thou wilt readily perceive a material difference between the claims of such persons, and of those who purchase a number of copies to lay on their shelves to meet the possibility of sales–In the former instance a certain profit (though small) is obtained, but in the latter, it is otherwise–Besides the chance of not selling, there are expences which a Philadelphia bookseller does not incur–The risk and freight are equal to one half of the profit thou offerest us–

We mention these circumstances through a belief that thou wilt, on reconsideration, think we are entitled to a little larger discount than if we applied to thee for a single copy on order. We have once been supplied with 9 copies of thy 'Collections' from a bookseller, our correspondent, in Philadelphia at 20 per cent discount–We did not apply to him for more, because we thought we were entitled to a large discount–And our impression that we were entitled to better terms arose from our being obliged to give to other booksellers 33⅓ discount, when they purchase in

1633 Barton papers, APS. Barton priced *Elements* to his pupils at $5.00.

quantities of us—And this in cases where besides the cost of paper & printing we pay a large sum for the copy right—

After saying thus much we conclude to ask the favour of thee to forward to us by the commercial line of stages 9 copies of the 'Collections' and only 2 of the 'Elements' We would take many more of the latter: but really it is not an object to sell at <u>such</u> a profit—We are chiefly in the wholesale and must give at least 10 per cent often out of the 16 which thou allowest—

With regard to sending others on commission, we would recommend not to send more than 6 copies of any kind—Every thing relating to <u>Natural History</u> is in our line and we can probably sell some thou mentiondst—With great respect we remain thy friends Collins & Perkins

Isaac Collins of New York was in business before 1800.

Zaccheus Collins (1764-1831), native of Philadelphia, Quaker philanthropist, "patient and successful cultivator" of botany, read the announcement of *Elements* in an advertisement at the back of Barton's *Collections*. He wrote to Barton 23 April 1803:

In returning the book which has enabled me so far to anticipate the publication of your interesting work on Botany...will you have the goodness to send me a copy—one in boards would be preferred, so that the binding at a future period may be more durable. I am a subscriber...[1634]

Among the bills sent to Barton were two from Peter Grant for stitching fifty pamphlets: fifty cents on 12 March 1808; and on 6 May 1809 for stitching twenty-four copies, $4.80.[1635]

Of his *Elements* Barton wrote sometime in 1806, keeping a copy, and probably to T. J. James, New York bookseller:

Of my botany only a few complete copies now remain. These are daily called for by my pupils and others, and on this account as well as others I cannot think of disposing of the work upon other terms than those I have hitherto adopted with the bookseller. The selling price of the work (in boards) is six dollars, I allow the copies to the booksellers at 5 dollars, payable in six months.

In regard to the Collections, I have always allowed, and continue to allow [blank] *payment. The first part of this work is almost out of print.—I have still a few copies of my Fragments of Natural History, the selling price of which is two dollars. In regard to this, the allowance is the same as for the Collections. Should you think proper to order the books upon these terms, they shall be put up for you without delay.—I take the liberty of enclosing a copy of the Proposal, for my work on Zoology, the first volume of which will appear this fall.*[1636]

His nephew insisted that the drawings of the last (1836), as in all the editions:

...may be relied upon for what passed his inspection and received his approbation...must be faithful as the pencil and the graver could make them. Those who painted the subjects of natural history for him know, and

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1634 Barton papers, APS. Book sales by authors prevailed over those by booksellers.

1635 Barton papers, Miscellaneous receipts, Box 4, APS.

1636 Barton papers, APS.

> *those who have multiplied those paintings by the graphic art also know...of his uncommon perception of errors, in the drawings and engravings.*

In a note he added:

> *I have frequently painted these subjects for him, and can therefore speak with the same certainty of fact...In fact he was, if I may be allowed to use such language, religiously conscientious not to suffer any things of this nature to pass with his name, unless they were true and faithful representations.*[1637]

Dr. David Hosack's copy of Barton's *Elements* (1803) in the New York Botanical Garden Library has his annotations here and there, for example, "Nymphaea" in changed to *Nelumbium*.[1638] The copy also carries notes penciled by Hosack's nephew, Caspar Wistar Eddy[1639] who, at seventeen years, became first vice president of the New York Lyceum of Natural History. Against the text for "Bartonia" (vol. 2, fn. on p. 14), Eddy penciled "untrue. Dr. B. must have ben dreaming when he thought that he saw it. See Willd[enow]."

The New York physician, editor, and enthusiast for natural history, Samuel Latham Mitchill (1764–1831),[1640] gave the most extended notice of *Elements* in *Medical Repository*.[1641] Perhaps it was that extended review that led him to make no mention of *Elements* in his comprehensive 64-page account of "the writings which illustrate the botanical history of North and South America" in 1814. Mitchill was critical of the five separate paginations for the parts of *Elements*–an annoyance that Barton adopted in his other writings. But Mitchill did admire the elegant plates that illustrated American plants for the various Linnaean classes. He also found Barton's use of American plants to demonstrate Linnaeus's *Philosophia Botanica* (Stockholm, 1751) to his liking, for it rendered that classic understandable in English. Mitchill noticed the "finished and embroidered appearance" and, by way of example, quoted:

> *...how greatly to be regretted that rice,* [i.e., Oryza sativa] *in the most free and happy country upon earth, should be cultivated, almost exclusively, by the hands of slaves! Shall we never learn to be just to our fellow-creatures? Shall we blindly pursue the imaginary advantages of this moment, and neglect the still but solemn voice of God, until 'Vengence in the lurid air, Lifts her red arm, expos'd and bare.'*

The following year in "Miscellany" for the [Medical] *Repertory* (1804) Mitchill again referred to Barton's text:

> *I might mention many authors who have well deserved, and received distinguishing marks of honourable esteem, not only from Europe, but from their own countrymen. I will at present particularize only one, Dr. Benj. S. Barton, Prof. of Mat. Med. &c...His Elements of Botany, the textbook to his lectures on that science, has been studied and recommended by all the lovers of that science in this country...In 1804* [it

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1637 W. P. C. Barton in *Elements* (1836), 13–14.

1638 [*Nelumbium* Jussieu refers today to *Nelumbo* Adanson, the Lotus. IPNI.]

1639 Casper Wistar Eddy (1720–1828), Hosack's pupil, took his M.D. in 1811. Meisel, *Bibliography* 3: 569; Robbins, *Hosack*, 66.

1640 Lyman C. Newell in *DAB*; Smallwood, *American Mind*, 297–301 and passim; Hall, *Mitchill*; Aberbach, *Mitchill*.

1641 *Med. Repos.* 1 (1803): 48–64, 156–166.

> was] *printed in London, and highly recommended to the student of that science in England...In another kingdom this work has received still greater marks of distinction. The Empress Dowager of Russia has, for her own gratification and improvement in a science which she has always patronized, caused the whole work to be translated into French. This it is presumed, is the first American work which has received this flattering distinction.*

Samuel Miller said that *Elements* "discovers an extent of learning, and acuteness and vigour of mind, and an elegance of taste, highly honorable to the author...Every part of this work discovers that the author has not been contented with compiling the facts and opinions of his predecessors, but that he has accurately observed and thought for himself."[1642]

Barton's neighbor, the Russian consul Daschkoff had probably expedited sending the copy of *Elements of Botany* to his sister, the Princess Daschkoff, a member of the American Philosophical Society since 1789, and a confidant of the Empress Catherine. *Port Folio* in 1810 carried the following "Literary Intelligence":

> *We are happy to announce the flattering distinction recently paid to our countryman Dr. Benjamin Smith Barton, professor of Materia Medica, Natural History and Botany in the University of Pennsylvania. A copy of his elegant and valuable work the Elements of Botany was presented by L. Harris, Esq. the American consul at St. Petersburg, to the Empress Dowager of Russia, who caused some parts of it to be translated for her use. From these she had derived so much satisfaction that a translation of the whole work into French has been ordered by her Majesty. This compliment we mention with more pleasure because it proves that no elevation can exclude the amiable studies of nature, and because we deem it equally honourable to the illustrious personage who offered, as to the distinguished scholar who received it.*[1643]

Barton arranged for other copies of *Elements* to be sent abroad. John Vaughan assisted in their dispatch, for example to William Roxburgh at the Calcutta Botanic Garden. Roxburgh responded 12 December 1804, "I thank you for your Barton's Botany. It is the second copy I have received from you—It is a most excellent work & will be of infinite use in all parts of the world where science is studied."[1644]

The anonymous editor of the London edition of *Elements* (1804) acknowledged that he had taken certain liberties with the text.[1645] He had, for example, changed Barton's Class IV Tetrandria "Four males" to "Four stamens," and so on through the classification. Besides considering that the style "was, moreover diffuse, and the matter redundant," he criticized "in particular the frequent tiresome and disgusting repititions of the terms, which bring the peculiarites of the Sexual System directly into view, have, as far as possible, been discarded: and in a single instance the Editor has not hesitated to give a turn to a paragraph, directly opposite to the design of the Author; but for this he is confident he shall be thanked by every friend to female delicacy and virtue." The sexual allusions were retained by William P. C. Barton down to the last American edition in 1836: Monandria, from mones, one or alone; ander, "a man or husband" (p. 218, fn.); gynandria, from gynos, a woman, and ander, a man (p. 273, fn.); cryptogamis, "clandestine marriage" (p. 289).

1642 Miller, *Brief Retrospect* 2: "Additional Notes," 516.
1643 *Port Folio* ser. 3, 3 (1810): 528.
1644 Barton papers, APS.
1645 *Elements* (London, 1804), advertisement, xii.

Barton had expressed his attitude toward the currently accepted plant classification: "The Sexual System of Linnaeus cannot be immortal. It will, at some future period, be deserted for a system more agreeable to the scheme of intentions of nature." On reading this and like statements, Benjamin Waterhouse, New England botanist, writing under a nom-de-plume, disliked Barton's "disrespectful and degrading epithets," adding, "seldom does Dr. Barton mention our great master without a sneer" and "Dr. Barton seems to allow Linnaeus these high honors [leadership in botany] with great reluctance...Dear Doctor, can any of us make a book two inches thick on botany, without being indebted for half of it to the Swedish naturalist?"[1646]

John Drayton of Charleston on reading *Elements* declared "it is a work which must be very useful to the public and honourable to its author," and was moved to send Barton "as a mark of pleasure" olives grown locally, picked on 19 August 1803, and cured the next day—the first attempt in the United States to grow *Olea europaea*.[1647]

Barton had launched almost immediately into but a slight revision of the first edition of *Elements* with a plan for more illustrations, and, from the urging of critics, the addition of an index. He hoped for further drawings from Turpin, now in Paris, but Turpin, replying 1 August 1805, had other commitments, although he evidently attempted to arrange for at least one colored engraving.[1648] About this time Barton commissioned James Bartram to assist in adding a capsule to the drawing of Pipsissewa, *Pyrola umbellata* (*Chimaphila umbellata*), which had been provided by William Bartram but not published in the first edition.[1649] François Michaux, too, agreed to assist Barton with engravings of the extra plates, even offering to "pay the expenses which may accrue," suggesting that Barton first seek advice from Louis Richard on the kinds of leaves for the planned extra plates of leaf forms.[1650]

In many ways Waterhouse's *The Botanist*,[1651] which had come to the bookshops in Boston the year before, resembled *Elements* for its wandering prose of philosophic commentary. But *The Botanist* has been barely noticed. Barton's second edition of *Elements* conveys what by this time is a certain resignation on the author's part. It was also published by the author. Although the preface was dated 27 March 1811, the book was not actually published until 25 April 1812. This edition, like its predecessor, appeared in two volumes, with some reset pages and nine new plates, two drawn by the celebrated French artist, P. J. Redouté, from "actual specimens," probably obtained by him from the Jardin des Plantes for the book's tamarind and the China-berry tree (*Melia azedarach*) among them, "no imaginary forms" being used. Pl. XXXII and XXXIII are additions to volume one (1812), pl. XXXIV and XXXV are additions to volume two. In his preface to the first edition, ix, he explained that in the Third part he followed the system of Linnaeus, although he had taken some liberties, having in certain genera followed "Mr. Swartz, one of the most distinguished botanists in Europe." Of his difficulties, "I have never yet seen Willdenow's edition of *Philosophica Botanica*," and *Species Plantarum* only "in a few instances." Of "Senebier's late work on the *Physiology of Vegetables*,[1652] I had not an opportunity of seeing any part, until I had printed off a great part of my work" (xii). These five works are among Barton's books in Pennsylvania Hospital.

The first edition of *Elements* had not been copyrighted, and it contained a list of corrections on page xiii. In the 1812–1814 edition each volume contained an index: volume one of mostly general and technical terms, two of common and scientific names, the

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1646 *Monthly Anthol. Boston Rev.* 2 (1805): 13.

1647 Barton papers, f. 60, HSP.

1648 Barton papers, APS.

1649 James H. Bartram, Kingsessing, 15 Feb. 1808. His drawing was not used in the second edition.

1650 Barton to L. C. M. Richard in Paris, 23 Sept. 1808.

1651 Benjamin Waterhouse, *The Botanist, being the botanical part of a course of lectures on natural history* (Boston, 1811). *TL-2.*

1652 Jean Senebier (1742–1809), *Physiologie Végétale* (Geneva, 1800, 5 vols.). *TL-2.*

corrections entered in the index rather than on a corrigenda page. Occasional index entries (the index compiled by whom?) bring a smile, for example, "Tail, Cat...1: 242."[1653] The preface of 1803 was repeated, with a new preface in each of the volumes in 1812. The dedication in both editions was the same: "To the Students of Medicine..." In volume one (1812) he wrote "This edition is much more extensive...and though still imperfect, and deformed, I fear, by many errors, I may venture to assert, that it is greatly amended..." (xiii). In the preface of volume two he mentions the floras he was working on, and his geography, zoology, and account of Indian tribes.

The text, as before, offers interesting reading for the plantsman. We read "Tillandsia usneoides or Long-Moss" is found only "in a vigorous state upon living vegetables" (p. 305), and it therefore is believed to be a parasite. Nuttall continued to believe it was a "parasite" in his *Genera* (1818).[1654]

Barton determinedly restated his agenda in the preface to the second edition of *Elements* (1812) in these words:

> *It now remains for me to request a candid examination of this work by the public; and especially by those to whom the number and variety of my professional engagements, and of my literary pursuits, may not be known. It is a fact, that the work, originally begun and written in sickness, has been carried on to its present improved and enlarged state, in the intervals between my laborious attentions to the duties of my profession as a physician, and those of a lecturer on three great brands of science in the University; on Materia Medica, Botany, and Zoology; and which I have been occupied in attending to the printing of several other works, much more original in their nature, and from which I venture to promise myself a more solid reputation: viz. two distinct Florae, one of six of the states of the American union; one of the state of Virginia; an elementary work on Zoology; and lastly, a volume on the origins, the migrations, the religious and political institutions, the languages, &c of the Indians of North-America; besides some memoirs on minor or more individual subjects. All these works are actually, at this time, in the press; and some of them are nearly finished.*

Barton's desperate statement of works in press was overly ambitious and wishful. Of *Flora Virginica* only Part One, 74 pages was published. Of his *Prodromus Florae Pennsylvanicae* only a few printed sheets survive. His "work on Zoology" was not completed and exists only as a number of short accounts, mostly published in journals. His major work on Indians remained in manuscript. One memoir may have been his *Archaeologiae Americanae* on extinct elephants.

Even so with this second edition he did not consider the work completed. A third edition "may possibly be called for by the public." Apologizing for its inadequacies, the *Elements* were "originally published under great difficulties, in sickness, and at my own expense." Yet he "flatters himself" that his work "will be consulted by the American student of botany, by the scientific agriculturist, by the amateur of plants."

A Louisville correspondent, James C. Johnston, in a letter "rec'd Oct. 10 1810" raised the issue of the need for an identification manual. Only Thomas Walter, *Flora Caroliniana*, a regional and wholly unsatisfactory flora for the layman, had appeared before the *Elements*. It was a skeletal text in Latin and was not to be had in such outlets as M'Mahon's seed store in Philadelphia. Michaux's *Flora*, in two volumes of inconvenient size for the field or hammock,

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1653 MacPhail, *Barton*, 17-18, provides detailed collation. On pp. 301-302 of the new edition Barton paid tribute to John Walker of Edinburgh, who had died since the first edition appeared.

1654 For several references to "parasitical Spanish moss" see Ewan, "Louisiana bibliography."

had appeared in 1803, but was not easily acquired in Philadelphia or other cities; both books followed the Linnaean sexual system of classification. Johnston had forwarded a few specimens to Barton and informed him 16 September 1810 that he had determined the class to which his plant belonged, but there "my research ends, I can find no name for it."[1655] Had Barton seized the opportunity to provide a manual for naming Atlantic Coast flora with brief descriptions and binomials, he would then have leaped into immortality! Barton, "author, bookseller, editor, publisher,"[1656] besides physician and teacher, was still perfecting his "Flora," and would need years to complete it.

The historian thinks of the year 1812 for the declaration of war on 18 June between the United States and Britain. Surely the townspeople of St. Louis and the rivermen had voiced opinions on the issues, however serious. Nuttall, a British subject, decided it was wise to return to England, and so Barton's protégé sent his collections for Barton to Philadelphia—though their fate is anyone's guess—and left New Orleans early in January 1812 on the ship *Columbia* for Liverpool. John Bradbury followed Nuttall, by separate passage, down the Mississippi, arrived in New Orleans 13 January, shipped his cargo to England, and took passage to New York on the 20th. Barton's alter ego, Frederick Pursh, had arrived in England ahead of Nuttall, had attended a meeting of the Linnean Society 21 January 1812, and had won the support of Aylmer Bourke Lambert (1761–1842) for the writing of his *Flora*. The signal event in Philadelphia, which did not involve Barton, was the meeting of the founding of the Academy of Natural Science on 17 March that year. Barton's embryonic Linnaean Society[1657] of few members limped along. It was against these events that the second edition of *Elements* appeared.

Records of book sales for this period seldom survive, and so the memoranda Barton kept are of interest. Anthony Finley's store at the southwest corner of Fourth and Chestnut became Matthew Carey's in 1817. Finley wrote to Barton regarding the discount allowed dealers. Finley's letter reads:

> *Philadelphia, Nov. 13th 1811*
>
> *Sir*
>
> *I take the liberty of addressing you on the subject of your new Botanical Work, respecting which we had a little conversation yesterday; and making a proposal for the agency of it.—if this proposal should not meet your ideas please to modify it and let me see it again.—*
>
> *The discount at which booksellers sell to each other vary from 20 to 25 & 33% per Centum, according to the number of copies of a book taken, with a credit of 2, 4 or 6 months—in their common running accounts. Booksellers in the city allow each other a discount of 1/6th and at the end of the year, when they settle, an additional discount of 5 or 10 percent on the balance of accts.—When the booksellers receive books on commission from others they are allowed 20 per Cent. & sometimes more.—I have thought necessary to premise this, as my proposal is partly founded thereon, and as I wish to vary it as much as possible to give you an opportunity of putting your work on such terms as you may think most conducive to your interests.*
>
> *I will become sole agent for you for a Commission of 33, 25, 20, or 15 per Cent, and make to Booksellers on my sales to them, a proportionate discount.—Acct. of Sales to be rendered at such stated periods as you may*

1655 Barton papers, APS.

1656 As described in H. Glen Brown and M. O. Brown, *Directory of the Book-arts and Book Trade in Philadelphia to 1820* (New York, 1949–1950), 16.

1657 See our Chapter XV.

think proper, and the monies received paid over. I am, Sir, respectfully your obt. St. Anthony Finley[1658]

This second edition of *Elements* inspired inquiries. Opium as a paying commercial crop from *Papaver somniferum* occurred to a Somerset County, Pennsylvania, farmer who questioned Barton in a letter 20 January 1814:

Dear professor, Having lately Been peruseing Your Learned and charming work the elements of Botany wherein it is Stated That the papaver Somniferum might Be cultivated in the Countries of the unighted States with much pecuniary profit—this pasage has Suggested to me the propriety of making the attempt—But i have Been Hitherto Detered—By not having the Poppy Seed and the Necessary Knowledge of Rearing the poppy and extracting the opium—i Shall Be much indebted To your goodness if you will procure Some of the poppy Seed & Send it inclosed to me in a Letter with the Necessary directions What climate of the Unighted States would be most favourable to the groth of the poppy—what Sort of manure would be Best calculated to put on the ground in which the poppy is to Be Sowed—have the goodness Send Such instructions to me on this Subject as you shall think Necessary &c i am with Sentiments of esteem Your admirer and Humbl Sevt. H.B. Trout[1659]

The busy professor probably did not respond to that letter, and so there came a more polished and flattering letter from a relative, George Washington Trout of nearby Westmoreland County, on 16 March 1814. He wrote that the *Elements* was "a work of great utility in this new country," and he "was charmed with the display of [Barton's] patriotism in recommending to the people of the United States the culture of the poppy and its manufacture into opium." We know no record of Barton's encouragement—he may have passed the letters on to Mease or to Peters, agriculturists both. There were attempts by the Shakers to raise the opium poppy, and to press the oil, but they met with little success. In 1807 a leading materia medica manual suggested again that "in the United States there is every reason to believe [that cultivation of the opium poppy] would prove a very lucrative branch of industry, not only from the opium that might be obtained, but also from the oil to be procured from the seeds, which is an excellent substitute for that of the olive, and is much employed to adulterate it."[1660] Here the use of olive oil was referred to as a liniment rather than as a condiment.

When the Boston editor Caleb Cushing traced the progress of botany in the United States in 1821,[1661] he commented on Barton's "inelegant style and immethodical arrangement" of *Elements*, but he admitted the text contained "much ingenious speculation and curious learning intermixed with which the author alludes to Linnaeus." He concluded that *Elements* must yield to many other elementary treatises, such as those by James Edward Smith, Sprengel, or de Candolle, all, we may add, European authors. He admitted "that it brings our own plants into notice by frequent references to them, and by means of colored figures, which Barton was very solicitous to have faithfully executed."

W. J. Hooker wrote of Barton's *Elements* in 1825: "He has the credit of publishing an elementary work on Botany, which, though rather diffuse in style, is full of entertaining

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[1658] Barton papers, APS.

[1659] Barton papers, APS.

[1660] Robert Egglesfeld Griffith, *Medical Botany* (Philadelphia, 1847), 121–122; Burkill, *Dictionary*, 1658–1660, for historical notes on poppy culture.

[1661] *N. Amer. Rev.* n. ser. 4 (1821): 100–134, esp. 111–112.

anecdotes; and the references and terms being all applicable to American plants, it must have done much toward recommending the study of botany in that country," as indeed it did.

In 1827 Robert Desilver, printer for the second edition of Barton's *Elements*, brought out two volumes, evidently from leftover stock, since the number of plates varies from copy to copy. William P. C. Barton in his 1836 edition, also published by Desilver, left out his uncle's dedication to his pupils and introduced his own preface and a biographical sketch of his uncle. He also reduced some of his uncle's verbiage.

The *Elements* was an institutional success for two decades, serving especially the premedical pupils at the University of Pennsylvania during the author's period there and for a time thereafter, but with the publication of introductory texts by Amos Eaton and Thomas Nuttall its primacy was lost. Why did this illustrated botany, written for the American reader about American plants by a staunchly American author, fail to hold the leadership? *Elements* passed into oblivion, unnoticed by botanists here or abroad even before the 1836 edition, because of its diffuse, too rambling style, its too many diverting morsels of information that delayed the reader in reaching his desired information or understanding. Then, too, had Barton published generic and specific names for the undescribed American plants that he and his associates had detected, professional botanists would of necessity have owned the book. Barton's noticing life cycles and the habits of native plants—in essence the beginnings of what we call ecology—was buried in anecdote and peripheral commentary. Since he was unable to proceed with his "Flora of North America" in its several announced forms, *Elements* stands as his most ambitious book, in sum the first illustrated botany text to be published in the United States.

[The text on the following pages is extracted from the figure legends *Elements of Botany*, 1836: 301-325.]

Elements of Botany,
or Outlines of the Natural History
of Vegetables

Illustrated by Forty Engravings
by Benjamin Smith Barton, M.D.

A New Edition:
by William P.C. Barton, M.D.

Philadelphia
Robert Desilver, 110, Walnut Street
1836

PLATE I.

C. Tiebout sculpt. [1836 frontispiece, Bartram drawing]

Fig. 1. The principal figure on this plate may serve to illustrate the XIIIth class, or Polyandria. It is the figure of Sarracenia purpurea, or Purple Side-Saddle flower. [fertile plant habit].

Fig. 2. The American Cranberry, or Vaccinium macrocarpon of Aiton. [fertile plant habit].

PLATE II.

Tanner sculpt. [Drawings probably Barton's.]

Fig. 1. The bulb (*bulbus s. radix bulbosa*) of the beautiful Atamasco-Lily (Amaryllis atamasca,) a native of the southern parts of the United States. [*Zephyranthes atamasco*]

Fig. 2. A transverse section of the same bulb, intended to show its tunicated or coated structure.

Fig. 3. The root of the Fumaria Cucullaria, commonly called Dutchmen's Breeches. [*Dicentra cucullaria*]

Fig. 4. The fusiform root (*radix fusiformis*) of the Wild-Carrot (Daucus Carota.) [Queen Anne's Lace]

Fig. 5. The stem and root of a species of Orchis. [an orchid]

Fig. 6. The Ophrys hyemalis, commonly called, in some parts of the United States, Adam-and-Eve. [*Aplectrum hyemale*]

Fig. 7. The root and a portion of the stem of the beautiful Limodorum tuberosum of L. (Cymbidium pulchellum of Swartz,) [*Calopogon tuberosus*, Tuberous Grasspink]

Fig. 8. The scaly bulb (*bulbus squamosus*) of the Lilium superbum. [Turk's Cap Lily]

Fig. 9. The root, &c, of the Devil's Bit, or Veratrum luteum of L. (Melanthium dioicum? of Walter.) [*Chamaelirium carolinianum*, Fairywand]

Fig. 10. The granulated root (*radix granulata*) of the white saxifrage (Saxifraga granulata.) [European Meadow Saxifrage]

Fig. 11. The horizontal root (*radix horizontalis*) of the May-apple (Podophyllum peltatum.)

PLATE III.

F. Shallus sculpt. [Bartram drawing]

Fig. 1. The root of Tuberous Moschatel (Adoxa moschatellina.) [Muskroot]

Fig. 2. Creeping Crowfoot (Ranunculus repens.) [Creeping Buttercup]

Fig. 3. Common Pilewort (Ranunculus Ficaria.) [Fig Buttercup]

Fig. 4. The Common Onion (Allium Cepa.) [Garden Onion]

Fig. 5. A branch of the Cardamine pratensis. [Cuckoo Flower]

Fig. 6. A species of Sheeps Fescue-grass... [*Festuca*]
Fig. 7. The strobile (*strobilus*) of the American Larch (Pinus pendula of Aiton.) [*Larix americana*]
Fig. 8. A view of the inner side of one of the scales which compose the strobile,... [*Larix americana*]
Fig. 9. A single, detached seed with its wing, or *ala*. [*Larix americana*]

PLATE IV.

Engrav'd by B. Jones, 1801. [Bartram drawing]

This plate is entirely appropriated to the beautiful American Painted-cup (Bartsia coccinea,)... [*Castilleja coccinea*, Indian Paintbrush]

PLATE V.

B. Jones sculpt. [Bartram drawing]

Representations of the Common Garden-Bean (Vicia Faba.)

PLATE VI.

Engrav'd by . Gilbt. Fox, N.Y.

This plate is intended to show the wonderful effects of light upon vegetables...A leaf of Mallow (Malva) is suspended in a glass vessel,...

PLATE VII.

J.H. Seymour sculpt.

The Dionaea Muscipula, or Venus's Fly-trap is figured upon this plate. [*Dionaea muscipula*]

PLATE VIII.

F. Shallus sculpt. [Bartram drawing]

Fig. 1. Canna glauca, a native of North-Carolina, and other Southern parts of the United States. [*Canna glauca*, an introduced cultivar]
Fig. 2. Canna indica, another species of the same genus. [*Canna indica*, Indian Shot]
Fig. 3. Different parts of the Common Horse-tail (Hippuris vulgaris.) [Common Mare's Tail]

PLATE IX.

No sculpt. [Bartram drawings]

Fig. 1. Cunila Mariana, commonly called in the United States, Dittany, Mountain Balm, &c. [*Cunila origanoides, Satureja origanoides*]
Fig. 2. An American species of Speedwell (*Veronica*).
Fig. 3. Collinsonia canadensis, commonly called Horse-weed, and Knot-root, because horses are remarkably fond of the plant, and because its root is very hard and knotty. [Richweed]

PLATE X.

No sculpt. [Bartram drawings]

Fig. 1. Commelina virginica, a beautiful North American plant, common in Virginia, and other parts of the United States. [Virginia Dayflower]
Fig. 2. Ludvigia alternifolia. [Bushy Seedbox]
Fig. 3. Part of Callicarpa americana, called Bermudian Mulberry. [American Beautybush]

PLATE XI.

Jones sculpt. [Bartram drawings]

Fig. 1. Common Tobacco (Nicotiana Tabacum.)
Fig. 2. A species of Ground Cherry (Physalis pennsylvanica?) [*sic, Physalis pensylvanica*]
Fig. 3. A species of Convolvulas from Florida. [*Convolvulus*, Field Bindweed]

PLATE XXII.

W. Bartram del., Lawson sculpt.

[Bartram drawing loaned to Barton by Woodhouse, to whom Bartram had presented it.]
Zanthorhiza apiifolia, commonly called Yellow-root.

PLATE XXIII.

Shallus sculpt.

Fig. 1. Hypoxis erecta, or Upright-Star of Bethlehem.
Fig. 2. Lilium canadense, or Canadian Lily.

PLATE XXIV.

J.H. Seymour sculpt. [Bartram drawing]

This plate represents the Medeola virginica, commonly called Indian Cucumber, from the taste of its root, or bulb, which is very similar to that of a cucumber. [*sic, Medeola virginiana*]

PLATE XXV.

Shallus sculpt. [Bartram drawing]

Fig. 1. Aesculus parviflora of Walter. This is a native of the Carolinas and Georgia. [Bottlebrush Buckeye]
Fig. 2. The flower of the Aesculus flava of Aiton. [Yellow Buckeye]
Fig. 3. The flower of the Aesculus Pavia. [Red Buckeye]

PLATE XVI.

No sculpt. [Bartram drawing?]

Fig. 1. Rhexia virginica, a beautiful North American plant. [Common Meadowbeauty]
Fig. 2. Gaura biennis. [Biennial Beeblossom]
Fig. 3. Different parts of the fructification of the Botumus umbellatus, or Flowering-Rush, which is a native of Britain. [*sic, Butomus umbellatus*]

PLATE XVII.

Tanner sculpt. [Bartram drawing]

Fig. 1. Cassia marilandica, a very beautiful but common American vegetable. [*Senna marilandica*, Maryland Senna]
Fig. 2. The sexual organs of the white saxifrage (Saxifraga granulata,) of which the root is figured in Plate II.
Fig. 3. Cucubalus stellatus, a very common American plant. [*Silene stellata* f., Whorled Catchfly]
Fig. 4. The flower (of its natural size) of the Common Poke (Phytolacca decandra.) [*Phytolacca americana*, American Pokeweed]

PLATE XVIII.

[Missing in the Ewan library copy,1836 edition; plate XXVIII is duplicated in its place.]

Fig. 1. Philadelphus inodorus, a beautiful North American vegetable. The petals are four in number. [Scentless Mock Orange]
Fig. 2. A flower before it has opened, of the May-Apple, called also Wild-Lemon, Mandrake, &c. It is the Podophyllum peltatum of L. and is a very common plant in many parts of the United States.

PLATE XIX.

Tanner sculpt.

[Missing, Ewan Library copy, 1836 edition; plate XXIX is substituted as a duplicate.]

Fig. 1. *Gerardia flava.* [*Aureolaria flava*, Smooth Yellow False Foxglove]

Fig. 2. Hypericum kalmianum. [Kalm's St. John's Wort]

Fig. 3. Different parts of the Stock July-flower (Cheiranthus incanus.) [*Matthiola incana*, not native to the United States]

PLATE XX.

J.H. Seymour sculpt. [Bartram drawing]

Napaea hermaphrodita, a native of many parts of the United States. [*Sida hermaphrodita*, Virginia Fanpetals]

PLATE XXI.

No sculpt. [Bartram drawing]

Robinia viscosa, a native of the southern parts of the United States. [Clammy Locust]

PLATE XXII.

Shallus sculpt. [Bartram drawing]

Tragopogon virginicum? [*sic, virginianus*] or Virginian Goats-beard. It is a common plant in Pennsylvania, and other parts of the United States. [*Krigia virginica*]

PLATE XXIII.

Shallus sculpt. [Bartram drawing]

Helianthus divaricatus? a native of Pennsylvania, and other parts of the United States, is figured upon this plate, which is intended to ilustrate the second order (Polygamia Frustranea) of the class of Syngenesia. [Woodland Sunflower]

PLATE XXIV.

No sculpt. [Bartram drawing]

Silphium terebinthinum, a North American plant. [*sic, Silphium terebinthinaceum* Jacq., Prairie Rosinweed]

PLATE XXV.

C. Tiebout sculpt. [Bartram drawing]

Passiflora incarnata, a native of the United States. It is sometimes called Passion-flower, but more commonly May-apple. [*Passiflora incarnata*, also known as Maypops]

PLATE XXVI.

Tanner sculpt. [Bartram drawing]

Fig. s.n. Cleome pentaphylla. The genus Cleome is arranged by L. in the class Tetradynamia, but the species which is here figured, is certainly not a Tetradynamous plant. [*Cleome gynandra*, Spiderwisp, Spiderflower.]

Fig. I. [smaller figure at plate right, *Habenaria psychodes*] [*Platanthera psycodes*, Lesser Purple Fringed Orchid. This was not in edition 1, but was inserted on the plate, although no explanation appears in the 1814 edition or later editions.]

PLATE XXVII.

Fig. 1. Betula populifolia, a native of Pennsylvania, and other parts of the United States. [Gray Birch]

Fig. 2. A portion of the Virginian Polypody, or Male-fern. This is a true dorsiferous Fern, the fructification being fastened upon the back of the frond. [*Polypodium virginianum*, but not now known as Male-fern.]

Fig. 3. Clavaria Acrospermum, represented of the natural size, as growing upon old, dry wood. [*Clavaria acrospermum* copied from Professor Hoffman's *Flora of Germany, or a Botanical Pocket Companion for the year 1795.* Volume II. Erlangen. Barton loaned his copy to Nuttall for his expedition "to the Northwest."]

PLATE XXVIII.

Tanner sculpt. [Bartram drawings]

Sagittaria sagittifolia, or Common Arrow-head. This is a very common plant in many parts of North America, as well as in Europe and Asia.

PLATE XXIX.

No sculpt. [Bartram drawings]

Fig. 1. and Fig. 2. The male and female plants of the Acnida cannabina, a common plant in the neighbourhood of Philadelphia, and other parts of the United States.

Fig. 1. The male.

Fig. 2. The female. [*Amarathus cannabinus*, Tidalmarsh Amaranth]

All the figures, [8 structures drawn] in the lower division of this plate, are different parts of the Veratrum album, or White-Hellebore, and are intended to illustrate the class Polygamia, and the order Monoecia. [*Veratrum album*, False White Hellebore]

PLATE XXX.

Fig. 1. Different parts of the Asarum canadense, or Canadian Asarbacca, commonly called Wild-Ginger, and sometimes Colts-foot. [*Asarum canadense*. Barton stated "no claim to originality" for this plate, *Elements*: x, fn. He added "4*" (see below) to the original plate.]

Fig. 2. The flower of Common Agrimony (Agrimonia Eupatoria,) of its natural size. Fig. 3. The same magnified. [*Agrimonia eupatoria*, Churchsteeples]

Fig. 3. Euphorbia Lathyris, or Caper Spurge. [*Euphorbia lathyris*, Moleplant]

Fig. 4.* Jeffersonia binata[1662] *mihi*. Jeffersonia Bartonis of Michaux: Jeffersonia diphylla of Persoon, &c. The writers whom I have mentioned, have followed me in referring this legitimate genus to the class Octandria: but a more critical examination of the plant has convinced me, that it more properly belongs to the class Dodecandria (so far as that class may be permitted to stand;) of which it is here offered as an illustration: or to the class Polyandria.

Fig. 5. A little turf of a Moss (the Bryum murale,) in fructification.

Fig. 6. A detached individual of the same Moss, magnified. [*Bryum murale*]

Fig. 7. Another moss.

Fig. 8. A. The capsule, which is cylindrical.

Fig. 9. The capsule of the moss, represented in Fig. 7., considerably magnified.

Fig. 10. A. The naked peristome. B. The opercule detached.

Fig. 11. & Fig. 12. Leaves of certain species of Mosses.

Fig. 13. The fructification of a Lichen.

Fig. 14. The funnel-shaped fructification of a Lichen.

[1662] [Both *Jeffersonia binata* Barton, 1793, and *J. bartonis* Michaux, 1803, may refer to Twinleaf or Persoon's *Jeffersonia diphylla*, 1805. IPNI. TROPICOS.]

Fig. 15. The fructification of the genus Marchantia. [*Marchantia*, a liverwort]
Fig. 16. The fructification of the genus Jungermannia. [*Jungermannia*, a liverwort]
Fig. 17. Peziza lentifera: *two views. [*footnote at bottom of page 320, Linn.—Nidularia campanulata of Withering. vol. iv. p. 350.] [Fungi, Gasteromycetes]
Fig. 18. Asplenium rhizophyllum, pushing out radicles and new leaves (fronds) from the extremity of the parent frond. [*Camptosorus rhizophyllus*, Walking Fern].

PLATE XXXI.

Musci:
All the figures on this plate are intended to illustrate the order Musci, of the class Cryptogamia. The upper figures represent the Polytrichum perigonale of Michaux: one of the most common of all the North American plants.
The figures below the line are devoted to the Bartramia vulgaris* of Michaux: another common American plant. [* refers to the footnote on page 321: Bartramia pomiformis of Hedwig.]

PLATE XXXII.

P.J. Redouté del., J. Vallance sculpt.

This plate contains representations of a number [39] of the principal forms of *Simple* leaves, drawn for this work by an eminent artist, [†Redoute of Paris.] from actual specimens, no imaginary forms being admitted. The greater number of the vegetables whose leaves are here represented, are natives of the United States: all those, indeed, of whose native country nothing is said.

PLATE XXXIII.

P.J. Redouté, 1809, del., B. Tanner sculpt.

This plate is wholly devoted to the forms [15] of *Compound* and doubly-compound Leaves. The figures were done expressly for this work, by Mr. Redoute.

PLATE XXXIV.

Turpin del., F. Kearny, sculpt. [Bartram drawing]

The upper figure, A., represents part of the stem with the leaves, and two flowers, one of which is in the unopened state, of the beautiful Aquilegia canadensis, or Canadian Columbine, one of the earlier flowering North American plants. [*Aquilegia canadensis*, American Columbine]
The remaining five figures represent parts of the flower of Dalibarda fragarioides, of the class of Icosandria. [*Dalibarda fragarioides*, now *Waldsteinia fragarioides*, Appalachian Barren Strawberry]

PLATE XXXV.

A.I. Nunes del., Kearny sculpt.

Fig. 1. The beautiful Coreopsis belonging to the class Syngenesia, and order Polygamia Frustranea. [*Coreopsis*, Tickweed]

PLATE XXXVI.

Turpin del., F. Kearny sculpt.

This fine plate is intended to illustrate the two classes of Monoecia and Polygamia.
The principal lower figure exhibits the Comptonia asplenifolia, or Sweet Fern, with its five male aments above: the female flowers below. [*Comptonia peregrina* is Sweet Fern. *Betula and Comptonia* were not available in Paris to sketch.]
The eight upper figures exhibit the Acer rubrum, or Red-Maple of the United States.

PLATE XXXVII.

[omitted, Ewan Library copy, 1836 edition]

Was engraved, but is omitted, being useless in this work. ["Was actually engraved, but has, unfortunately, been mislaid, or lost. It could not be replaced without occasioning a considerable delay in the appearance of this work."]

PLATE XXXVIII.

Kearny sculpt.

A seedling plant of the Cupressus disticha, or Bald-Cypress, of the United States, showing its five cotyledons, and the young green leaves; all of the natural size. [*Taxodium distichum.*]

PLATE XXXIX.

W. Bartram del., Tanner sculpt.

Pyrola umbellata, of the class and order Decandria Monogynia.

This is one of the more common North American plants, extending far south of the limites assigned to it by Michaux, in his *Flora*, vol. i. p. 251. "Pyrola (*umbellata*) foliis cuneato-oblongis: argute serratis: scapo corymbifero: stigmate sessili." Michaux, l.c.

Pyrola umbellata is one if the very many North American plants, which are eminently odoriferous. The odour of its flowers is truly fragrant. No observation is more unfounded than that which asserts, that the odour of the vegetables of the United States is feeble? [*Chimaphila umbellata*, Pipsissewa.]

PLATE XL.

W. Bartram del., Tanner sculpt.

A good figure of the *Sanguinaria canadensis*, or Puccoon.

Chapter XIV

Biogeography, Humboldt, and Economic Botany

"We are interested, however, in other inquiries than those which respect the mere collection, the nomenclature, or the systematic arrangement of our plants."
—Barton in *Discourse*

Biogeography

It may have been upon reading the newly published John Pinkerton's *Modern Geography* (London, 1802), especially the chapter on America, that Barton persuaded John Conrad to publish a Philadelphia edition with the chapter on America revised by Barton. Or it may have been after some negotiation with Conrad that in return for assuming the publication of his *Philadelphia Medical and Physical Journal* Barton would prepare the "Geography" for America, North and South, for a Philadelphia edition, 2 volumes (1804), which Conrad had an interest in producing. Barton's article in Volume 2, pages 394–554, with only thirty-four pages devoted to the United States, showed clearly how wide had been his reading. Francisco de Ulloa had described Chiloë; Banks and Solander with Captain Cook had described Tierra del Fuego; Pernetty the Falklands; Fernandino Naronha mentioned Trinidad, and so on. For the Missouri River, "the following account is principally transcribed from Mr. Morse's *System of American Geography*, & from the writings of Carver and Hutchins." For the lakes he cited Morse, MacKenzie, and Charlevoix; and Arrowsmith's *Map of North America* (1800).

The climate of North America and China are, Barton wrote, "very similar, and the vegetables productions...in many instances, the same." He suggests seeing João de Loureiro's *Flora Cochinchinensis* (Lisbon, 1790). On page 407 he wrote "Mr. Pinkerton (in the original work)" says "the language of the Malays, who extended themselves so far to the east of Asia, has no connection with that of the Americans. This bold assertion is founded on the imperfect tables of Dr. Forster."[1663] Barton found some resemblances, and refers the reader to his *New Views*, pages 33, 34, etc. He would have had "Missouri" the name for the Mississippi—"sippi" means river, see *New Views*, 80. Volney disliked St. Lawrence as a name for that river. Barton would have called it *Hocheloga*, the Indian name. New Orleans is referred to as an island, which it was at that time, and he mentions Iberville. On 4 November 1803 Barton had borrowed the manuscript of the English surveyor at Pensacola, George Gauld (ca. 1732–1782), "A general description of sea coasts, harbours, lakes, rivers," etc., of West Florida, which, after reading, Gauld had presented to the American Philosophical Society 18 July 1773.[1664]

1663 Johann Reinhold Forster (1729–1798), German traveller, author of "A Comparative Table of various languages in isles of the South-Sea," a folding chart after p. 284, in *Observations made during a Voyage round the World, on Physical Geography, Natural History and Ethic Philosophy* (London, 1778).

1664 Sabin, *Dictionary*, 26764, lists its publication with other papers (London, 1796). Bernard Romans had appropriated material from Gauld's manuscript for part of his Gulf Coast report. Gauld and Romans were both elected to the APS 21 Jan. 1774—Had Romans delivered Gauld's papers to the Society? (APS, "Minutes," 80, 82, 87). Catlett, *Guide*, no. 411: the paper had been declared uninteresting for publication in the *Transactions*. On Bernard's link with Gauld see John D. Ware, editor, facsimile edition of P. Lee Phillips, *Notes on the Life and Works of Bernard Romans* (Gainesville, 1975), passim.

The *Monthly Anthology and Boston Review* under its "Monthly Catalogue of Publications" announced Pinkerton's *Modern Geography*, Philadelphia edition (1804):

> *The publishers have used their endeavours to make the work deserving of every liberal encouragement...and equal in all respects to the English quarto edition, which sells for nearly three times the price. The geography of this country is revised and considerably augmented by Dr. Benjamin Smith Barton; The American maps are drafted by Mr. Samuel Lewis, principally from actual surveys, and engraved by Harrison, Lawson and Turner. Careful attention has been paid to correcting the press...*

The subscription price was to be $12 per copy until the work was completed, then $15. Pinkerton's announcement, "A handsome ed. 2 vols. 8 vo. with a quarto vol. of maps. This edition may rank with the best that has issued from the press in this country."

In a combination review and advertisement the following year, Barton referred to *Modern Geography* as "a work of classical merit."[1665] He stated that he could not review this whole, more convenient form than the London edition, and he apologized to Pinkerton for correcting some of his errors. He had, for example, disagreed with Pinkerton on the origin of the American Indian, and he hoped he had corrected such errors in the Philadelphia edition. He acknowledged that "not a few desiderata have been supplied, and some of them, I flatter myself, have been supplied in a very able manner; those I mean which have been communicated to me, viz. the articles, Law, Manufacture and Commerce." For Law he had consulted Alexander James Dallas (1759-1817), one time editor of *Columbian Magazine*; and for manufacturing and commerce Tenche Coxe.[1666] That he failed to mention William Bartram was an unfortunate oversight.

Barton's contribution carries extensive footnotes indicated "B" taken from his own writings, for example, *Fragments* on p. 507; *Collections*, 459; and *Observations*, 455. In *Fragments* he had acknowledged Bartram as a source, and in this account he cited Pernetty, Humboldt, Frezier, Weld, Drayton, and Carver, documenting his use of books in his personal library. Alexander Wilson sent William Bartram volume two of Pinkerton's *Modern Geography* with the atlas. Writing Bartram, 17 September 1804, from Union School near Gray's Ferry, Wilson deemed it the best thing that had appeared on the subject, but regretted the brevity of the treatment of natural history:

> *34 pages only allotted to the whole of the United States! This is brevity with a vengeance. I had indeed expected from the exertions of Dr. Barton as complete an account of the Natural History of this part of the world as his means of information and the limits of the work would admit. I have been miserably disappointed and you will pardon me when I say that his omitting entirely the least reference to your researches in Botany and Natural History and seeming so solicitous to let us know of his own productions bespeak a narrowness of mind and self consequence and is an ungrateful and unpardonable omission. Every man acquainted with you both w[oul]d have rejoiced in the oppor. of making the world better acquainted with a man whose works shew such a minute and intimate knowledge and attention of these Subjects and from those superior Abilities and experience he had himself received so many Obligations and much information. But no—All is silent not even the slightest allusion least posterity might discover there existed in the United States a man of Genius and information Superior to himself. My dear Sir—I am a Scotchman and*

[1665] *PMPJ* 1 (1805) Pt. 2: 188-192.

[1666] Both Dallas and Coxe appear in *DAB*.

> *don't love my friends with that cold icy selfish prudence that I see in some and if I offend in thus speaking from the fullness of my heart I know you will forgive me.*[1667]

Barton's main interest, here, however, was in plant geography.

> *By a geographical view of vegetables, I mean an arrangement of vegetables according to the extent of country which they occupy from north to south, and from east to west; as well as according to their altitude above the level of the sea. Such an inquiry would, of course, involve much curious and important matter relative to the nature of the soil, and climate of the country.*[1668]

Barton's significance in plant geography rests on his enthusiasm for both native and foreign floras. All the while he was lauding the American wild garden with patriotic zeal, he was gathering facts about Japan's plants from Thunberg, Mexico's from Don Vincent Cervantes, and those of the Ganges plains of India from William Roxburgh. His search—too ambitious for his resources, to be sure—was for broad principles. Year after year through far-flung correspondence he sought to gather fresh facts. On 4 November 1790 Barton had initiated a correspondence with Professor Thunberg, recently returned to Uppsala from South Africa, Java, and Japan. Barton wrote of his plans for his "Flora" and that he would like to hear more of Japanese plants. He mentioned a new observation: that many Eurasian species also occur in the United States.[1669]

Although many of our textbooks credit Asa Gray with being the first to identify this pattern of nearly identical species in North America and Asia, Linnaeus's pupil, Halenius, as early as 1750 pointed out the similarity.[1670] When in 1840 Asa Gray reviewed Siebold and Zuccarini's *Flora Japonica* he stressed the striking affinity between the floras of the middle latitudes of eastern Asia and eastern North America.[1671] Much later he reminisced that "I was a very young botanist when I began to notice [the Sino-American distribution pattern] and I have from time to time made lists of such instances...I should now not be greatly surprised if a *Sarracenia* or a *Dionaea*, or their like, should turn up in Eastern Asia."[1672] So now we move credit to an earlier American botanist.

While Barton was away at the University of Edinburgh, the young Italian Luigi Castiglioni had been traveling in the United States in 1785–1787, primarily to observe the development of the new republic, but also to collect useful information on trees and shrubs for his native Lombardy. From the vicinity of Montreal, Quebec, to Savannah, Georgia, he met many of the country's leaders, collected current thoughts on governments, and collected seeds and information on native plants. He says little of botanists he may have met. In Philadelphia he mentions only Franklin and Rush, but one would expect that he had visits to Bartram's and Hamilton's gardens, and that at a meeting of the American Philosophical Society he also met Collin and Kuhn. Once home, he organized his journals with their cullings of natural history. He had lost two collections of plant specimens while crossing swollen streams. In his *Viagio negli Stati dell' America Settentrionalis...* (Milan, 1790, 2 vols.), Castiglioni called attention

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1667 Hunter, *Wilson*, 222; and with slight alterations, Ord, "Wilson," xxxi.

1668 *Discourse*, 42.

1669 Univ. Uppsala.

1670 *Plantae Rariorum Camschatcensis* (Uppsala, 1750), in *Amoenitates Academicae* (Uppsala, 1751) 2: 332–364. Soulsby, *Linnaeus*, no. 1612.

1671 For Gray's review of this first part of Philip Franz Siebold (1796–1866) and Joseph Gerhard Zuccarini (1797–1848), *Flora Japonica* (Leiden, 1835 [–1841], 2 vols.), see Charles Sprague Sargent, ed., *Scientific Papers of Asa Gray* (Boston, 1889, 2 vols.) 1: 37–40. *TL-2*.

1672 Talk at Harvard Univ. Nat. Hist. Soc. 18 April 1878, as publ. in *Amer. Jour. Sci.* 16 (1878).

even more precisely to Sino-American relationships. Citing Kaempfer, *Amoenitatum Exoticorum* (Lemgo, 1712), 878, Castiglioni mentions such disjunct genera as *Magnolia*, *Illicium*, and *Panax*, as common to eastern Asia and eastern North America.[1673] His inclusion of *Calycanthus* in this pattern must be revised, since the related Asiatic genus *Chimonanthus* is now recognized as distinct. His remarks on *Bignonia catalpa*, however, refer to the presently recognized Sino-American genus *Catalpa*.

Castiglioni relied heavily on Marshall's *Arbustum Americanum*, but does not mention whether he talked with Marshall. He says he noticed the similarities while comparing Gronovius, *Flora Virginica*, with Thunberg's *Flora Japonica* (Leipzig, 1784). He presented a copy of his work through Benjamin Rush to the American Philosophical Society. This work has recently been translated in full by Professor Antonio Pace[1674] with full commentary and natural history identifications.

Did Barton hear on his return from Edinburgh of Castiglioni's conclusions, or had he come to his own conclusions from perusing *Flora Japonica*, which Collin may have loaned him? Or from Thunberg's gift in 1797 of *Icones Plantarum Japonicarum* (Uppsala, 1794-1805, 5 parts)? Whether or not an independent conclusion, Barton seems not to have published his observation until *Discourse*.

In an early undated draft of a lecture, Barton's ideas are presented:

> *It had long been known that the Genseng; the Persimmon; the Poke, the Catalpa; the Illicium; and some species of Mulberry were natives of nearly the same latitudes of China, of Japan, and of North America: but since the publication of the Flora Japonica, of Professor Thunberg, I have discovered that the catalogue of vegetables which are common to Asia and to the same parallels of North America is much more extensive than has been generally supposed...*
>
> *So great, indeed, is the catalogue of those vegetables, which are already known to be natives of China, of Japan, and of the temperate and northern parts of our continent, that I do not dispair of living to see the day when even the Camellia and the Tea shall be discovered blooming in some of the vast, and hitherto, unexplored, regions, which are situated to the west of the river Mississippi.—*[1675]

Although Barton was too optimistic about finding *Camellia* and tea west of the Mississippi, his conclusions preceded Asa Gray's of 1872. Pursh and Nuttall were both instructed by Barton to watch for examples of Asiatic relatives, and Pursh mentioned the pattern in his *Flora*, xvi. Barton commented to Langsdorff in April 1810 on the usefulness of Johann Georg Gmelin's *Flora Siberica* (St. Petersburg, 1749-1769, 4 vols.), which he owned, as an aid in his study of Sino-American distribution.

Barton announced his intention of producing a "Sketch of a Geographical View of the Trees and Shrubs of North America" in *Fragments*, vii, and on 7 February 1800 read a memoir on the subject before the American Philosophical Society. Although it was favorably considered for publication, Barton withheld it for further improvement. He had begun to collect materials as early as 1795 and had mentioned the work and its nature to his botany class "almost every year since 1796."

One unnamed correspondent in 1797 from Philipsburg on the Big Mushanon River in western Pennsylvania confirmed his observations that trees varied in their growth according to their position: "The trees on the top of the Alleghaney [Mountains] have their longest

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1673 Pace, *Castiglioni*, 260, 364. Hui-li considered "Luigi Castiglioni as a pioneer in plant geography and plant introduction," *Proc. Amer. Philos. Soc.* 99 (1955): 51-56.

1674 Pace, *Castiglioni*.

1675 Barton papers, APS.

branches on the Southwest side and the shorter ones on the opposite side—this appearance is particularly to be observed on the Yellow pine and chestnut trees." One undated note from William Bartram, "On geog. distr. of trees and shrubs," reads "Magnolia acuminata. The tree called the cucumber tree in the Western Country grows to a much greater height than is mentioned by Mr. Marshal,—I have never seen the flower I cannot pretend to say whether it is even the same; it however [is] probably the species of Magnolia here."[1676]

Barton showed "Sketch of a Geographical View" in 1804, and read parts of it to Humboldt "who was at that time in Philadelphia, on his way to Europe, and who frequently visited me at my house." Lively discussions undoubtedly enriched the backgrounds of both. During Humboldt's visit with Jefferson the "Sketch" was mentioned. Humboldt referred to Barton in his classic reports on his expedition to South America and Mexico, in *Essai sur la Géographie des Plantes* (Paris, 1807), especially on p. 154; in *Nova Genera et Species plantarum* (Paris, 1815–1825, 7 vols.), 1: xxx; and in *De Distributione Geographica Plantarum* (Paris, 1817), 76; and in later works.

Again Barton referred to his proposed work in *Discourse*, 42: "Hitherto I have not published this memoir, from a desire to see it more perfect. The truth is, that much remains to be collected relative to the diffusion of our vegetables, before any thing like a finished geographical view of them can be published."

As plans proceeded, Barton wrote to his brother, Richard Peters Barton, who had recently spent some time in Tennessee considering the purchase of land and moving his family there. Richard's observations would add to and confirm what Barton had already accumulated. Richard's original answer was not delivered due to an undependable "person of genteel appearance," and so Richard had composed another dated 26 March 1808:

> *Dear Brother,*
>
> *...I regret the loss of this letter to you the more because I am not now able to give as full an answer to some of your queries, as I was when the different subjects to which they refer were fresh in my memory. For altho' I made hasty notes in my journal in respect to your enquiries, yet much was trusted to the memory; and I now find it difficult to recall a great many points to recollection. But to shew you my desire to comply with your wishes in respect to your queries I will return you such answers as I am enabled to give at present.*

This letter came safely "Favoured by Mr. Gray," and Barton acknowledged it "Answered April 24, 1808." It is a worthy description of an area to which settlers from the east were crossing the mountains in increasing numbers.

> ***Query 1. Relates to the Mountains, their names, their directions, highest peaks, comparative heights of their sides and the materials of which they are composed.***
>
> *The mountains which separate Tennessee from N. Carolina are, Stone mountain, Yellow mountain, Iron mountain, Bald mountain, Great Iron mountain, Smoky mountains & Uncka mountains. These are branches or links of the great Aleghany chain, which separates the waters of Tennessee rivers (Holston, Watauga, French broad, Nolachucky,) from the head waters of the principal rivers of N & S Carolina. Their general direction is from N.E. to S.W. Yellow mountain is said to be the highest of these, and I believe the highest mountain in Tennessee. A gentleman who resides near them, and who formerly resided in Virginia, near the Peaks of*

1676 Barton papers, APS.

Otter, told me, he thought the Yellow mountain more elevated than the Peaks. It is probably, therefore, they are 2000 feet high at least.

Clinch mountain which runs W.S.W. between Clinch and Holston rivers, is a mountain of very moderate elevation. Beyond this, and paralel with it is the great chain called the Cumberland Mountains. This divides the waters of Tennessee and Cumberland. It is composed of a number of ridges of a variety of names, with large, and very extensive plains between them. The whole distance across these mountains, on the road to Nashville, is about 60 miles, and this tract is called the Wilderness, here as well as where it separates Virginia from Kentucky. I believe this to be a continuation of the great Laurel Ridge which passes through the western parts of this state. When it enters the state of Tennessee it alters its direction, by turning more to the westward. I have never crossed the Laurel ridge, or I should be able to speak positively on this head. The Cumberland mountains are strongly characterized by this circumstance, that they separate the horizonatal stratifications of lime stone (and no doubt of all the other stone) from the inclined strata of the more eastern country. I did suppose the Aleghany formed this line but from Christiansburg, where I crossed the Aleghany, to Abington, to Knoxville, and untill I crossed the Cumberland Chain, a distance of 300 miles, the position of this limestone and slate is the same, or nearly so, as in this valley. Immediately on passing these mountains, the face of the country assumes a new appearance, and may well be called a new world. The general aspect of the country, the soil, the growth of timber, and even the water courses differ from the country on this side.

You enter the Cumberland Chain, twelve miles from Clinch river at S.W. Point. Here the first ridge is called Walden's ridge. About ten miles further is Spencers Hill, the most precipitous mountain I ever saw, over which a wagon road was cut. When crossing both these hills, I paid attention to their precipitous sides. They are remarkable for the disparity in this respect between the east and west sides. The ascent from the east is gradual and the wagons fully laden may pass going westward, but it is impossible for a wagon to return with half a load, and it is customary to make 'two or three turns' (as they are called) at Spencers Hill. I was also attentive to the precipitous side of the Aleghany, but after a very gradual ascent from the eastward for two miles, there was scarcely any descent on the western side; the country from thence to Abington (100 miles) being a high, extensive plain, giving rise to the Holston, flowing S.W. and New River (Great Kenawha) running N.W.

The base of the Cumberland Mountains generally is a pretty soft free stone (or sandstone), mostly white, tho' sometimes of a reddish colour. Limestone occured but twice in a space of 70 miles. At the Crab Orchard near the foot of Spencers-hill a limestone vein crosses the road; and about 40 miles further another vein makes its appearance. At both these places the soil is infinitely better than it is generally throughout the Wilderness tract. In passing this dreary waste little is to be seen worthy attention for a distance of 70 or eighty miles. The soil is sandy & gravelly and very poor, and considerably broken with sandstone. The surface of the country is frequently pretty level for many miles, especially when you enter what are called the barrens. There are extensive tracts resembling old fields, formerly cultivated, and now grown up, with a coarse sedge-grass, Chinkapin bushes, scrubby oaks, a few scattering chestnut trees (or rather bushes), pines, &c. Some glades occur without a bush or shrub upon them, and permit the view to extend many miles. These glades are famous resorts

of bears.[1677] *We saw three or four a day. They are in search of Chinkapins and Chesnuts.*

The hunters here enabled me to correct a geographical error in the maps in regard to a river we crossed, called Obey's, and which was supposed to be the head of Obey's river of Cumberland. The hunters, however, who have explored it, declare that it is a branch of Emery's river falling into Clinch on this side the mountains. Between these extensive tracts of barrens (or glades) large bodies of woodland occur, of pretty good timber; but the soil is poor. The growth mostly oak and chesnut. Water is scarce in the Wilderness.

As we approached the Cumberland river, within 16, 12, 10 & 5 miles; and having passed the ridges of Cumberland mountains running s. westwardly, we enter a very hilly country of ridges, whose general direction is Northwards of N. Westwardly. These ridges are very narrow and are cloathed with a prodigious growth of Chesnut, oak, and poplar, with large beech, buckeye, gum, ash, wild cherry, hackberry &c. &c. Descending from these ridges the beautiful Cumberland river, presents itself, deeply imbedded in a channel which it has excavated in immense masses of limestone and rich earth. Here the rich and beautiful country of West Tennasee begins; and here it is that the astonishing variety of timber presents itself. In riding a mile or two, near the Cumberland, I counted 29 different kinds of trees; all of which I cannot now recollect, but can enumerate most of them. Beech [Fagus grandifolia] predominates, and of a large size, Red [,] White and Turkey oak, hickory, poplar, elm, sycamore, buckeye [Aesculus], locust of two kinds, black haw, dogwood, Lynn,[1678] *mulberry, ash, walnut, sugar maple, gum, hackberry [Celtis laevigata], common maple, wild cherry, pappaw [sic,* pawpaw*], willow & Yellow wood or bear berry.*[1679]

Querie 2. Any information respecting the climate. What is the most northern part of Tennessee, in which Cotton will grow to advantage? Has any change been, marked by the inhabitants taken place in the climate since the first settlement? The greatest depth of snow?

East and West Tennassee differ materially in respect to climate, 'tho lying under the same parallel of latitude. E. Tennassee is a very elevated country, very hilly, or ridgy and watered by innumerable streams of limpid water, mostly limestone. The soil is dry and friable, frequently gravelly, and moderately rich. The heats there are by no means immoderate, and the diseases incident to maritime N. Carolina rarely prevail. Indeed I doubt if there is a healthier country in the U. State than this. On the other side of the Cumberland mountains, or, as it is called, W. Tennassee The country lies lower, the soil is immensely rich, and cloathed with a heavy growth of timber, shrubs, plants &c. the country is pretty level, and not so regularly watered. From these causes it is not to be expected that W. Tennassee will prove as healthy as E. Tennassee.

It is however, at present, a healthy country; infinitely more so than Maritime N. Carolina or Virginia: And there are good reasons for supposing it will remain so. I had my fears on this head, but a visit to the country, and many observations, have removed my apprehensions. The

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1677 [*Ursus americanus* Pallas, 1780, American Black Bear. MSW.]

1678 *Tilia americana* L.

1679 *Rhamnus caroliniana* Walter, now *Frangula caroliana* (Walter) A. Gray, Carolina Buckthorn. IPNI. ITIS.]

Country (say about Nashville) is elevated many hundred feet above Richmond or Petersburg [Virginia]. *These latter places are on tide water, whereas Nashville is 1000 miles above tide water, following the course of the Cumberland, Ohio & Mississippi. The soil is limestone (very highly calcareous) and all the waters are remarkably transparent, and flowing almost invariably over rocky channels. There are no swamps or marshes to be seen. But a circumstance which influences this climate beyond all others, at present, and must continue to do so for a great many years, is the heavy growth of timber, almost every where sheltering the earth from the direct influence of the sun. The influence of this, almost universal, shade is great. It prevents the rays of the sun reaching the earth, and by reflection greatly increasing the heat of the atmosphere. As soon therefore as the sun retires in the evening, an agreeable coolness is felt every where. On this account the dews are very heavy. I visited an old gentleman, an emigrant from S. Carolina, now settled on Duck river. I asked him if the heats in Midsummer, were not very great. He said not; and in particular objected to the coolness of the nights, which made a blanket necessary in July.*

The prevailing winds in summer are from the S. West. In the winter W. and N. West winds blow generally, Easterly winds sometimes. These latter are not accompanied by rain as with us. It is probable they are divested of all their superfluous moisture before they cross the Aligany and Cumberland. Snow frequently falls at Nashville, but seldom lies a few days. Last Decemr. or Jany. twelve months, snow fell at Nashville, twelve inches deep. This was the deepest snow ever known there. The Cumberland river has been frozen over since the settlements upon it, but this is a rare occurrence. On the night of the 18th of last October at Nashville ice was formed on vessels of water as thick as a dollar.—

As to the great heats, I could obtain no precise information. I met with a person who kept a thermometer. I think Docr. Robertson told me he supposed the greatest heats were about 96 degrees.

West Tennessee is too new a country for any perceptible change to have taken place since its first settlement. In E. Tennassee, the inhabitants think that snows are more rare, and the country is generally warmer than it was twenty five years ago. This is highly probable, and is what might be expected from clearing the land, and permitting the sun to act upon its surface.

[Then after a reply to a question about the need for salt by cattle in the newly settled area, Richard continued:]

Quere 4. Appearance of the timber; comparative sizes, vigour, age &c. What is the largest species of timber of Tennassee? Does the Coffee tree**[1680] **grow to a great size? Is the seed of this much used now? Is its timber as valuable as we have been told? To what particular purposes do the**[y] **apply the timber? Is it durable?

The timber of West Tennasee is infinitely larger than any I have ever seen on this side of the Cumberland Mountains. The variety is also much greater. In addition to the trees already enumerated, there are Chinkapin oak, water oak (having a leaf resembling the laurel), iron wood,[1681] *shittam wood,*[1682] *Cedar and Sassafrass*[1683]*; The latter very large, say three feet over*

[1680] [Kentucky coffee tree, *Gymnocladus dioicus* L. Koch. IPNI.]
[1681] [American Hornbeam or Ironwood, *Carpinus caroliniana* Walter. IPNI. ITIS.]
[1682] [*Halesia carolina* L., also called Opossum-wood or Silverbell-tree. IPNI.]
[1683] [*Sassafras albidum* (Nutt.) Nees. IPNI.]

the stump, and thirty feet to the first limbs. The largest trees I saw were chesnut and poplar. Many of the latter were six, seven, and eight feet in diameter, five feet above the ground, and from 50 to 70 feet high to the first limbs. They are generally perfectly straight, and make good plank, scantling, and rails. An old Virginian settled there, assured me he had made 700 good rails from one poplar tree. Beech also grows to a large size. Hickories remarkably large and straight, bearing nuts of a size much greater than I have ever seen here.

I obtained little or no information respecting the Coffee tree. Those I inquired of know little about it; only that it was seldom used at present. It is, I presume a scarce tree, for I never met with it.

Quere 5. Make inquiry about the 'Hackberry tree' Is its wood valuable? Preserve some good leaves for me, in a book, and also some ripe berries. The latter are said to be the favorite food of the Parrakeets.

The Hackberry [Celtis laevigata] is a very common tree in West Tennassee, and grows to the size of our common middle sized white oak, say from one foot to two in diameter, sometimes, though rarely, much larger. It is a very soft wood and splits freely, and on the latter account is used for rails, but it is not durable. Being remarkably white, and taking glue well, it is also used by cabinet makers for inlaying. The berries are eaten by the Parrakeets; but I am told that their more common food was the seeds of the Cuckold bur, and sycamore balls. The wood of the Hackberry is used also for fuel, for which purpose it is very good.

The hackberry grows in this valley; and I lately saw one tree in Culpepper County. It is called here, Sugar nut, or sugar berry tree. Children are fond of these berries which are about the size of a small wild cherry and sweet. It is a small tree with us here. I preserved some of the leaves and berries, but the leaves are much mangled.

Quere 6. Inquire about the Buckeye. Does it poison cattle? What symptoms does it produce, when eaten by them?

The Buckeye is found in most parts of W. Tennessee and grows to a large size. When cattle have eaten many of the nuts they are seized with violent colic, and are so much swollen as to be in danger of bursting, and if relief is not afforded them they generally die. The cure is performed by doses of melted fat or oil, and by glysters.[1684] *But when these do not succeed, an awl or darning needle is thrust through the paunch to releive the distension. This remedy, apparently so desparate, is said to succeed when all other remedies have failed. The nut is very astringent, and probably produces a constipation in the bowels. If injections of tobacco juice in warm water were thrown up in good time, I have reason to believe that the complaint would seldom prove fatal.*

[Query seven was a request for "Colombo" for materia medica, eight on parakeets,[1685] nine on possible Indian fortifications, and ten and eleven on fossils[1686] and imprints, with an added note,]

On the Iron Mountain is a species of pine called the Balsam fir.[1687] *It produces a gum, deemed a specific for consumptive complaints. But to return to your queries*

1684 Clysters, or enemas.

1685 [The extinct Carolina Parakeet, *Conuropsis carolinensis* L. 1758. AOU.]

1686 See also "Fossils" in our Chapter XXV.

1687 [Linnaeus first described this as *Pinus balsamea* in 1753. The Balsam Fir was later distinguished by Philip Miller in 1768 as *Abies balsamea*. IPNI. ITIS.]

Quere 12. Make some enquiries about the domestic dies of the people: their best reds, yellows, &c.

In W. Tennassee there is a very common tree called Yellow wood, or bear berry–[1688] *It grows about the size of the pappaw, and somewhat resembles it, in the appearance of the bark especially. It bears a black berry about the size of a small black cherry, which the bears are fond of. The inner bark is yellow, and mucilaginous. This bark is said to die a very fine yellow.*

The inner bark of the Sassafrass[1689] *is used for dying red, but is inferior to madder.*[1690] *Sumach, of which I discovered two kinds, is the purple of the country people. The fruit, leaves or branches are used for that purpose.*

Querie 13. Any information about the sugar maple. Is more than one tree used? Is it true that a tolerable molasses is procured from the Button wood or Sycamore? I have been told so.

The Sugar maple is found every where in W. Tennessee, and the common maple also. But notwithstanding the high price of foreign sugars at Nashville; yet little attention is paid to the making of maple sugar. I suspect the process of making this sugar is not well understood by the inhabitants generally, who for the most part are Virginians and N. Carolinians. One kind of maple only is used for this purpose. I never heard that sugar or molasses was extracted from the Sycamore; but I have been told that the walnut tree has been used for this purpose in Virginia. Punkins and corn stalks have frequently been made to yield molasses, during the war, when 'sweetening' was scarce.

Near Abington much maple sugar is made. A store keeper at King's salt works told me he had received into his store in one season 6000 wt.

I find I have neglected to speak of the cultivation of Cotton in Tennassee. It is the staple commodity of the country. In E. Tennassee I do not think it prospers well. It is probably that the nights are too cool for this delicate plant; or the frosts occur too early in the fall to permit it to come to full maturity. It thrives much better in W. Tennassee, and is cultivated to advantage as far north as the Kentucky line. I am satisfied however that it prospers better a few degrees further to the south. On Cumberland lat. 36 degrees an acre of cotton produces 1000 wt. (in the seed); about the head of Mobile, lat. 34 degrees the product of an acre is supposed to be 12 to 1300 wt., and near Natchez, lat. 31½ degrees the common yield of an acre is 1500 wt. The Cumberland soil is richer than the soil of Natchez; so that the differences of produce arises from Climate. Much cotton is grown in the southern counties of Virginia lat. 36½ degrees to 37 degrees. within a few years. It has taken place of the tobacco crop, which is found to be less

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1688 *Rhamnus caroliniana* Walter [Carolina Buckthorn is now recognized as *Frangula caroliniana* (Walter) A. Gray. IPNI. ITIS.]

1689 [*Sassafras albidum* (Nutt.) Nees. IPNI.]

1690 The cultivation and use of the introduced *Rubia tinctorum* L., Dyer's madder, was encouraged by Bernard M'Mahon, *The American Gardener's Calendar* (Philadelphia, 1806), 321–323. It was included as late as the tenth edition (Philadelphia, 1851), but was omitted in the last, the eleventh (Philadelphia, 1857), edited by J. Jay Smith. This last had a biographical account of M'Mahon by William Darlington, xii–xiii. Darlington had included madder in his *Agricultural Botany* (Philadelphia & New York, 1847), revised as *American Weeds and Useful Plants*, edited by George Thurber (New York, 1859), 164, fig. 114. The use and decline of the plant is considered by Rita J. Adrosko, *Natural Dyes in the United States* (Washington, D.C., 1968), 20–25, illus. p. 22. See Ewan, "M'Mahon"; *TL-2*; R. H. Sudds in *DAB*.

profitable than a cotton crop even as far north as Petersberg lat. 37 degrees...[1691]

Barton left himself a memo "May 11, 1808. I sent Mr. Manning[1692] 218 sheets, all good, to complete the first form and one part for 2d form of Geo. View of Vegetables." On "June 13, 1808...the 2d form of my 'Geographical view of vegetables' has been sent to the printer to work off. The MS for the 3d form has not yet been sent to him."[1693] Ian MacPhail had given bibliographic details and an account of the only known surviving copy, that sent to Jussieu.[1694] Barton, or someone after him, consigned other printed copies of this as well as the *Flora Virginica*, and the *Prodromus*, to the flames since slight scorching was noticed on one of these before we recognized its possible significance.

What appears possibly to have been a scissored piece of a printed proposal for the publication of *Geographical View* survives among Barton's "Miscellaneous papers." What remains reads:

With complete charts, of the Mississippi from St. Louis, Mississippi east, and the chain of Cordilleries, or Rocky mo[untains] *south.—Also, of all the interior provinces of New Spain, fi*[om the] *Ocean, Gulph of California, and the Atlantic Ocean or Gulph*[.]

The work will be put to press immediately, and published [pro]*bably in three months. It will contain 400 octavo p*[ages] *to subscribers three dollars, in boards, payable on delivery.*

Subscriptions received by C. and A. Conrad and Co. Philad[.] *Conrad, Petersburg: Bonsal, Conrad and Co., Norfolk; and C*[—]. *Persons holding subscription papers are requested to return June 1, 1808.*

Barton evidently did not receive sufficient subscriptions for the work to go beyond the twenty-six pages that were printed. A footnote in a "Preface" suggests that he felt he was checkmated. "Among several others to whom I actually showed the work, in its unfinished state, I may mention Mr. Volney. This ingenious gentleman takes notice, in his Tableau des Estates Unis, of my intention of publishing on the subject." Once again a European with financial backing had scooped the natural history fields, this time of geology, geography, and Indian lore. Volney's *Tableau* (Paris, 1803) appeared in Philadelphia the following year, having been translated by Charles Brockden Brown. Volney's well-organized account discussed the physical features of the northeastern states and "western country" with a description of the Mississippi Valley area, the Ohio River terraces, Niagara Falls, and notes on Indians. Barton suggested that Volney's tour had been too hasty, his acknowledgements inadequate. "Unless we interrogate [Nature] in all the wild and majestic scenery of her works" how shall we "at some future period possess a correct theory of the earth?" Had Volney's book captured the small reading public that made it unprofitable for Conrad and Company to risk the completion of *Geographical View*? Was this why Barton sent all that was printed of *Geographical View* with an extra preface in which he also absolved himself of "the distressing charge of plagarism," hoping there might be sufficient interest in Europe to forward publication of his work? He wrote to Jussieu in Paris 5 August 1809:

1691 Barton papers, APS.

1692 Thomas S. Manning, Philadelphia printer from 1804–1809.

1693 Barton papers, APS.

1694 For bibliographic details of *Geographical View* see McPhail, *Barton*, 9–13.

Sir,

I do myself the honour to transmit to you, all the sheets yet printed, of my Specimen of a geographical View of the trees and shrubs of North-America. I have taken the liberty of dedicating the work to you. When completed, this specimen will consist of at least four times as much matter as I now send to you. No part of the Introduction has been printed: The First Table is not near completed; and the Second Table, of which none is yet printed, will contain the Linnean and other Scientific names of the vegetables mentioned in the first table. As far as my health and leisure will admit of my finishing this laborious essay, the remainder of the Sheets will be forwarded to you. You, Sir, are the only person to whom I have entrusted the portion now printed.

I shall be happy to learn, that the plan of my 'Specimen' meets your approbation. To point out the active actual limits of the useful vegetables of a great country, is, unquestionably an important object. My labours will, I flatter myself, be of some consequence to your countrymen, or other European nations, who may wish to transfer into your continent, the oaks, the maples, the walnuts (Juglans), and other important trees of North America.—Should you find time to attend to the Subject, I should feel much gratified to have the title, and general objects of the work, announced in some of the literary journals of Paris.

We have long been anxious to have a new edition of your excellent work, the Genera Plantarum. I hope it is your intention to favour the public with one. If there is any thing that I can do for you, in America, for the furtherance of your object, I beg you to command my services. I can, with great facility, supply you with seeds, or dried specimens, and many of the American plants.

I beg you to be assured of the great respect with which I am, Sir, Your very obedient & humble servant, &c.,

P.S. I send this, together with the printed sheets, to the care of Mr. Warden, the American Secretary of Legation. A line left with him, will be safely conveyed to me.

Exact copy, [and a note written to himself on the copy:]

N.B. With this letter I sent to Jussieu, 4 forms of the work, viz. the whole of the tables including page 26: ending thus 'in the state of New York,'—also the title-page & dedication, & two first pages of the preface. not a word was corrected, in these pages, with the pen, even where I might have corrected.

N.B. The package was thus directed. 'Mr. De Jussieu, Paris. To the particular care of Mr. Warden, Secretary of the American Legation.' 'Honoured by Mr. Peale.'[1695]

Jussieu's reply to Barton, if there was one, is not with his papers, and so: had he considered it worthwhile?

Barton again referred to *Geographical View* and mentioned it as in press when he wrote to Langsdorff in St. Petersburg, 10 April 1810: "I send you a few trifling publications by

[1695] Barton papers, APS. David Baillie Warden (1772–1845), English-born American patriot, a resident of Paris for forty years, consul-general of the United States, often facilitated the exchange of materials between residents of the two countries. His interest in botanical subjects is shown by his comparison of the use of the bark of *Magnolia tripetala* with *Cinchona*, *Med. Repos.* 3rd hex. 1 (1810): 25–28. Francis C. Haber, *Bull. Inst. Français Washington.* n.s. 3 (Dec. 1953): 75–118. Rembrandt and Rubens Peale on a tour of Paris in 1809 contacted Warden. George A. Barton in *DAB.*

myself. When finished, my Flora of the U. States, or rather of six of the states, and also my Geographical View..., both of which are in the press, shall be forwarded to you. These works will be more interesting to you than anything of my own now sent."[1696]

Geographical View opens with a laudatory letter to Jussieu, whom Barton styles as the world's "first" botanist, and a recognition that Jussieu's natural system of plant classification excels Linnaeus's artificial. Natural history, he wrote is "a field so extensive and so fertile, that for thousands of years to come, it will furnish ample materials to exercise the genius and the patience, and to call up and fan the virtues, of naturalists."[1697]

Barton begins his geography at latitude 72–71 degrees with a discussion of the observations of Samuel Hearne from *A Journey from Prince of Wales's Fort in Hudson's Bay to the northern Ocean...* (London, 1795), and continues southward ending abruptly mid-sentence on p. 26 with his discussion of the limits of distribution of sassafras about latitude 41 degrees. He has culled notes from his wide reading of McKenzie, Kalm, Hakluyt, Crantz, Steller, Foster, André Michaux, and Carver. He has corresponded or conversed with his brother Richard, with Heckewelder, André Michaux, Pike, Pennant, Volney, and on ginseng with Peter Osbeck. Thus far he had not mentioned the observations of John Bartram on his trip to Lake Ontario, or William Bartram.

Too often he listed plants by common name only, intending to add Linnaean names in the second "Table." He listed plants associated within the same latitude in a "classification," in a sense an ecological recognition. "An arrangement of plants Geographical and Geological, that is according to the extent of their distribution over the earth, or particular countries of the earth, and in reference of the great masses of soil which they inhabit, cannot fail to throw light upon many of the most interesting questions in Natural History...I venture to promise myself, that it will be of considerable use, to those who may, in future, engage in researches and speculations of the same nature" (p. 6).

Of particular interest to Barton were the grapes (*Vitis*) of North America. "I intend to publish an express memoir on the native Grapes of North America, for which I have large materials, and which, indeed, is nearly ready for the press" (p. 18 fn). He had John Bartram's published article on "Vines," and William Bartram's on native species, as well as notes from Amos Gregg, Jr., in a letter 10 September 1804 from Bristol, Pennsylvania.[1698]

Barton's northernmost record is that of Jacques Cartier from Bacchus Island, his name for the Isle of Orleans in the St. Lawrence River at 47 degrees. He wrote:

> *Dr. R*[einhold] *Forster, and other learned writers, have long since supposed, that the Winland dat Gode, which is said to have been discovered by the Normans in the year 1001, was a part of Newfoundland. The discovery of some part of the continent, or adjacent island, of North-America by the Normans, long before the greater discoveries of Columbus and Vespucci, must, I think, be admitted as an historical truth* [(p. 18).] [He added] *I have myself observed Vines in great abundance, and attaining an unusual vigor in the country of the Oneida-Indians (in the state of New York)* [(p. 19).]

The largest tree he had ever seen was a sycamore, not less than fifteen feet in diameter, in West Virginia near the Ohio River in 1786. Into the stump of it he and Rittenhouse rode and turned their horses round inside (p. 25). To Langsdorff he confided in April 1810: "For more than ten years I have been in pursuit of the Flora Siberica, which I conceived to be a work of much importance to me in my inquiries into the history, geographical range, & of the plants of

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1696 Barton papers, APS.

1697 "Specimen," dated 18 Sept. 1808. p. 7.

1698 *PMPJ* 1 (1804).

North America, which, in many instances resemble those of northern Asia."[1699] C. F. Dencke sent meteorological observations from the Thames River on the north side of Lake Erie for September 1800.[1700]

Barton requested Warden in Paris on 9 September 1811 to look over the enclosed memoir, the "Specimen," to have it translated for insertion in a French periodical, perhaps the *Journal de Physique*. "I confess that I am anxious to see the memoir seen in good French, in some respectable periodical work, and that as soon as may be,—Rather than it should not be well translated (if your liesure will not allow you to perform the task), I would willingly pay the expense to some person, whom you may employ."[1701]

Confirming Barton's persistent interest in geographical distribution, and his interest and knowledge of Sino-American plant affinities, he wrote to Clinton shortly before his departure to Europe in 1815. DeWitt Clinton, Barton's junior by three years, lieutenant-governor, state senator, repeatedly governor of the state, and twice mayor of New York City, was a presidential candidate in 1812. He encouraged literary, benevolent, and scientific organizations: for examples, he was a founder of the New York Historical Society and the Academy of Fine Arts.[1702] He befriended Rafinesque as a young foreigner who gratefully named the genus *Clintonia* for him. He later proposed Audubon for membership in the New York Lyceum, thereby opening the door for him among American naturalists. Interested in the economic potentials of his state, Governor Clinton published *Letters on the Natural History and Internal Resources of the State of New York* (New York, 1822). Barton wrote, this his second letter of the month to Clinton, distinguishing two orchids:

> *February 28, 1815*
>
> *Sir*
>
> *In regard to your question about Cypripedium bulbosum, this is certainly a native. A. Menzies found it in Nova Scotia, & specimens from this part of N. America have flowered in England. We shall, doubtless, find it in other parts of Northern America, for why should it be confined to the British province of Nova Scotia? especially as it inhabits N. Eastern Asia, on the Lena, &c, as high at lat. 55 degrees.*
>
> *This plant is not, I think, a Cypripedium* [Ladyslipper]. *My friend Swartz, an excellent botanist, called it, at different times, a Limodorum & Cymbidium. It is the Calypso borealis* [Fairy Slipper] *(a fine poetic name) of Mr. Salisbury, who has given a colored figure of it in Paradisus Londinensis.*
>
> *I thought you might not be displeased to be told these things. I wish you may be able to read my writing, at all times about illegible, but more so, at present, due to sickness.*
>
> *I am, Sir, with much respect Your obedient,* [&c] *Benjamin Smith Barton—*[1703]

Humboldt

Just when Alexander von Humboldt (1769–1859)[1704] (Figure 34) and Aimé Bonpland (1773–1858) arrived in Philadelphia is uncertain, but on 23 May 1804 John Vaughan wrote to

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1699 Barton papers, APS.

1700 *PMPJ* 1 (1805) Pt. 2: 142.

1701 Barton papers, APS.

1702 DeWitt Clinton (1769–1828), born in Orange County, New York; A.B. Columbia College, 1786; friend of and memorialized by David Hosack, *Memoir of DeWitt Clinton: with an appendix containing numerous documents...* (New York, 1829). Dixon R. Fox in *DAB*.

1703 Barton papers, APS, a copy.

1704 On Humboldt, Wagenitz, *Göttinger*, 85.

William Thornton, M.D., in Washington, that "Mr. Peale, Dr. Fothergill & Dr. Collins with thee famous traveller Humbold & two of his 'Companions de Voyage' visit your city. I give this letter to Mr. Peale," and then he added "Will you my dear Sir make another effort for the Portrait of Priestley–finished or unfinished, we shall cheerfully try to make it profitable to him, by an engraving if he wishes it..."[1705]

On 5 June 1804 at a meeting of the American Philosophical Society it had been "Resolved that Dr. Wistar be permitted to introduce A. von Humboldt as a visitor to any subsequent meetings." To the delight of the Society on the twentieth they elected their distinguished guest to membership.[1706] Barton was present at both meetings. Barton wrote enthusiastically to Sir Joseph Banks 7 June:

> *Mr. Humboldt lately arrived in this city, from South America. He is rich in the possession of materials for illustrating many important points in the Botany, Zoology, Mineralogy, &c &c, of the extensive countries which he has visited. I long to see the result of his observations made to the public. Among the things he discovered, the tree which produces the Angustura bark. It is a new genus, which hold affinities with Cinchona; but it belongs to Pentandria, Trigynia, and has alternate leaves.*[1707]

The most detailed account of the visit was given sixty-five years later when the Reverend John Bachman of Charleston, an associate of Audubon, recalled how, as a theology student of fourteen years of age at Frankfort, Pennsylvania, on a visit to Philadelphia during Humboldt's time in the city, "attempts were made to collect together a few who had any pretensions to natural science residing in Philadelphia." He was invited to meet Humboldt and confessed he felt undeserving of the "high honor of the invitation," and mentions the fact here to show "how scanty in those days were the materials of science." The youth had "occasionally" accompanied Alexander Wilson on his field excursions and had spent "vacations and Saturdays" at Bartram's Garden. Bachman reminisced:

> *A dinner had been prepared for the occasion in Peal's Museum. Among the few naturalists who attended were the two Bartrams, Wilson the ornithologist, Lawson (his engraver), George Ord, and a few others whose names now escape my recollection. To the small group was added a considerable number of men who were eminent in the various departments of literature and science. Few speeches were made and those were short–there was no formality.*

Forgotten then were Barton, Wistar, Peale. Indeed Barton may have been referred to as a Bartram. Bachman continued:

> *Humboldt was then, as he was afterwards in every society–the observed of all observers, ready to answer any question that was propounded to him, and evidencing throughout a spirit of gentleness and kindness and great amiability of character. I saw him every day during the few days he remained in Philadelphia. He inserted my name in his note book, and for the last sixty years we corresponded at long intervals.*[1708]

1705 Thornton papers, 3: 438. LC Manuscript Room. The second companion was Don Carlos Montúfar of Ecuador.

1706 APS "Minutes," 358, 359.

1707 Dawson, *Banks Letters*, 7.

1708 William W. Hicks, *Tributes and Memories* (Boston, 1914), 84–85. No mention of Bachman's meeting with Humboldt appears in C. L. Bachman, *John Bachman* (Charleston, S.C., 1888).

Beginning botany classes are told that Alexander von Humboldt was the Father of Plant Geography, that his principles of zonation, compensation of latitude with altitude in plant distribution, and broad controls of climate on vegetation types have all been the forerunners leading to twentieth century ecology and environmental studies. As has been said elsewhere "plant geography is to vegetation what etymology is to language: it lays bare the patterns that provide the symmetry."[1709] Humboldt's principles of plant geography resulted from his carefully planned travels and explorations, and collecting in tropical America. His reports and specimens from these travels were accompanied, for their time, by exceptional documentation.

Humboldt's visit to the United States from 20 May to 30 June 1804 and the persons he met have been extensively detailed by the cartographer-historian, Herman B. Friis.[1710] Nevertheless many details of his forty-two day visit are still missing or are at variance among authors. Barton was to enjoy several sessions with this young traveller so close to his own age and interests, their talks centering on topics of mutual interest, geographical distribution and natural history.

> *In the summer of 1804, I showed the Sketch* [Geographical View], *and even read parts of it, and explained the whole plan of it, to the ingenious Baron Humboldt, who was, at that time, in Philadelphia, on his way to Europe; and who frequently visited me at my house. The essay had previously been mentioned to the Baron, during his visit to the city of Washington, by Mr. President Jefferson.*[1711]

Inasmuch as both Barton and Humboldt were avid letter writers, that letters between them are missing must surely be due to the autograph craze, and accordingly at least Humboldt letters must be in private hands. Barton wrote to Jefferson, then in Washington, "This will be handed to you by Mr. F. A. Humboldt. I am persuaded that I need not offer an apology for introducing to your knowledge and attention, the explorer of South America, and one of the most intelligent and active philosophers of our time. We all regret that his stay among us is to be so short."[1712] Wistar also wrote an introduction, which Jefferson acknowledged with "Baron Humboldt's treasures of information are inestimable, and fill us with impatience for their appearance in print."[1713]

Humboldt's visit to Lancaster where he met Andrew Ellicott, William Barton, and Henry Muhlenberg is preserved in a thank you note to the pastor:

> *My dear and honored friend,*
>
> *I use these last moments before my departure tomorrow, to express once more my heartfelt thanks to you for the great kindness which you showed me and my friends in Lancaster. Your grasses and your kind letter have come to hand and I promise to let you know Michaux's names for them. Bonpland commends himself to you with gratitude for your kind remembrance. Yesterday he had a delightful meet with your brother the*

1709 Ewan, *Short History*, 115.

1710 "Alexander von Humboldt, Besuch in den Vereinigten Staaten von Amerika vom 20 Mai bis zum Juni 1804," in Alexander von Humboldt, *Studien zu einer universalen Geisteshaltung*, Joachim H. Schultze, ed. (Berlin, 1959), 142–195, with 194 footnotes. W. T. Stearn, ed., "Humboldt and Bonpland's Travels in America" in Humboldt, Bonpland, *Kunth and Tropical American Botany* (Lehre, 1968), 44–48, gives 29 May–18 June as the dates of their visit to the United States.

1711 *Geographical View*, 1st p. 10.

1712 Jefferson papers, LC.

1713 Jefferson papers, LC; Sellers, *Peale* 2: 182–187 on the trip to Washington.

worthy General. Remember me to the good Ellicott and Mr. William Barton. We saw the Hamilton garden with astonished delight

Yours most gratefully
Humboldt
Philadelphia the 27 June 1804[1714]

Surely it had been Barton himself who had accompanied Humboldt to exhibit the proud collection of native and exotic plants at Hamilton's "Woodlands." As a postscript Humboldt in a letter to Jefferson from Paris, 12 June 1809, in a slight lapse of memory, wrote "please be so kind as to remember me to Messrs [eleven persons, concluding with] Barton Smith, who showered me with kindness during my visit to Philadelphia."[1715]

A close reading of Humboldt's *Essai sur la Géographie des Plantes* (Paris, 1807)[1716] reveals prominent attention to Barton's concepts. Complimenting Barton for his broad concern with zoological facts and linguistics, and for his attention to the botanical patterns of distribution, whether on the mountains or on the plains of Pennsylvania, the Carolinas, or Virginia, Humboldt remarks on the few boreal species present on the White Mountains. This was a topic that Barton was pursuing with the Reverend Manasseh Cutler and Professor Peck. The richness of the forest flora of Eastern North America impressed Humboldt as it had all early botanists, including Barton and Michaux, although Humboldt had not yet seen Michaux's *Flora*, it having been published during his absence in South America. America's oaks and conifers compared with those of Europe neatly complemented the thesis, held so firmly by Americans against such savants of Europe as Buffon, that American animals were not inferior to those of the Old World. There had been, then, philosophical views as well as lists of genera and species to be spread out and compared. Although Humboldt met Wistar, Charles Willson Peale, and Henry Muhlenberg, it was Barton who was thrice cited in his *Essai*, the third and longer reference in an addendum to the *Essai*.

Humboldt again referred to Barton's views on the distribution of trees east and west of the Alleghany Mountains in his *De Distributione Geographica Plantarum* (Paris, 1817), 76. In the interval between Humboldt's two books on plant geography, Barton published the "Table," which Humboldt had found noteworthy, under the title *Specimen of a Geographical View of the Trees and Shrubs, and many of the herbaceous Plants of North America* (Philadelphia, 1809).

After his "long and arduous journey, surely" as William T. Stearn says, "one of the most remarkable and fruitful in the whole history of scientific exploration,"[1717] Humboldt wrote in February 1805 to his friend in Geneva, Marc-Auguste Pictet, regarding his proposed publications, believing that Barton among other Americans would advance their sales.

I do not hesitate to say that among the anti-federal party [in America] *the success of my travels has produced quite enthusiasm, as anyone can judge by the newspapers that find their way here. The sale in the United Sates will be very large, and should it be requisite to find subscribers—a method that always seems to me wanting in delicacy—I am sure that my friends Messrs. Jefferson, Madison, Gallatin, Wistar, Barton and others will be able to obtain a large number. An English edition, therefore, ought to consist of at least 4,000 copies.*[1718]

1714 Wallace, *Muhlenbergs*, 313.

1715 Helmut de Terra, *Proc. Amer. Philos. Soc.* 103 (1959): 791.

1716 A facsimile was issued in an edition of 510 copies by Institut Panaméricain de Géographie et d'Histoire (Mexico City, 1955) with an analytical index. An unsatisfactory facsimile omitting pages 36–152 was issued by the Society for the Bibliography of Natural History (London, 1959).

1717 Wm. T. Stearn, "Humboldt's Essai..." *J. Soc. Bibliogr. Nat. Hist.* 3 (1960): 351–357.

1718 Helmut de Terra, *The Life and Times of Alexander von Humboldt* (New York, 1955), 199.

Humboldt was to find that in America (as it turned out he also found in Europe) despite whatever efforts his friends may have put forth, there was not a sufficient number of citizens interested in far away scientific exploration to meet the desired number of subscribers. Throughout his career Barton suffered the same disappointment. Barton purchased Part 2 of *Voyage aux Régiones Équinoxiales du Nouveau Continent* (Paris, 1807–1814), on 11 February 1811, but *De Distributione Geographica Plantarum* (Paris, 1817) appeared after his death.

With "sincere friendship" Humboldt wrote to John Vaughan from Rome 10 June 1805, "I plan to make you, in a month or so, a small gift of the first two volumes of my travels...[I] expect to complete the publication of my Tableau physique...so that I can dispatch this to you, and the greatly respected president Jefferson, and to Mr. Barton all of whom I love to remember." He then mentions a hope of returning to the country to explore it and his present involvement. He concludes, mentioning so many of the Society's members:

> *Lots of good wishes to all who showed me such kindness in the United States. I cant pick up a newspaper without being reminded of all the good things you did for me in your beautiful land. Greetings to Mr. Barton, the good Mr. Wistar, Messrs. Peale, Hare, Woodhouse, Pierce Butler, Robert Patterson, Ellicot, Dr. Collins, Mr. Mifflin.*
>
> *Should you write to the president and the great statesmen Gallatin and Madison, remember me to them. Dont forget to give my greetings to Mr. Smith and the ingenious Dr. Thornton in Washington, Fothergill...and the Quaker Samuel R[h]oads to whom I owe so much.*[1719]

On the same day on which Barton had glowingly announced Humboldt's visit to Jefferson, he had concluded his lectures on natural history. Darlington wrote 7 June 1804, "At the close of this Lecture, Dr. Barton bade us a polite, & perhaps a last Adieu."[1720] Darlington was to correspond with and to write appreciatively of his professor. He had accepted his medical degree the day before. Barton was re-elected 14 May by the managers of Pennsylvania Hospital, serving with Drs. Thomas Parke, Rush, Wistar, Physick, and John Redman Coxe. On 22 June his attendance was requested at a meeting of the Almshouse staff.[1721] There was difficulty even then in distinguishing yellow fever from "Malignant fever," or malaria, and Barton so admitted in an exchange with Dr. James Reynolds, "exile from Ireland," a staff member of Pennsylvania Hospital from 1804–1807. Rush noted that he "possessed talents and knowledge," was "very popular among his countrymen," and that he died an alcoholic 25 May 1808.[1722] Reynolds's letter from the "Health office," 6 October 1804 read:

> *Dear Sir,*
>
> *Dr. Kuhn had informed a Member of the Board, whom he referred to you for particulars, that the two Servants of the present British Minister, died during the last Week, of Malignant bilious fever, under your care, in the Pennsylvania Hospital.*

1719 De Terra, "Studies of the Documentation of...Humboldt," *Proc. Amer. Philos. Soc.* 102 (1958): 562–563, portr.

1720 "Notes taken from the lectures of Doctor Barton on Natural History:—Systema animus scientiae est. By Wm. Darlington, Student of Medicine Anno Domini 1802–[1804]," 20 lectures, unpaged, University of Kansas, Lawrence.

1721 Barton papers, APS.

1722 Butterfield, *Rush*, 865.

The Board give very little credit to this report, altho' it has reached them from this quarters—confident that were it well founded you would not have concealed it from them.

I am, Dear Sir, respectfully yours,
James Reynolds, Secy.[1723]

To this Barton replied the same day:

Dear Sir,

It is strictly true, that two persons did die of a fever, which I could not distinguish from genuine malignant yellow fever, under my care, in the Pennsylvania Hospital, in the course of last week. Had I met with the case in any other situation, than in the hospital, where they were when I was first sent to see them, I should certainly have given the board information on the subject.

I am, Dear Sir, Yours with much esteem,
B. S. Barton[1724]

The twenty second of August had brought a respite, for he "went to Bartram's."[1725]

Economic Botany and Richard Peters

Practical aims were embodied in the very name American Philosophical Society for the Promotion of Useful Knowledge, and so from the beginning of the colony and into the young republic, economic botany and plants of promise in materia medica engaged the citizenry, rather than what came to be called the pure sciences.

Dr. Benjamin Schultz, eldest of a Montgomery County schoolteacher's seven children, studied anatomy under Dr. Caspar Wistar and materia medica under Dr. Barton. He was awarded his M.D. in 1795 with his dissertation on Pokeweed, *Phytolacca decandra,*[1726] the frontispiece by William Bartram. Schultz pondered, "With what enthusiasm and at how much expense, do we send many thousand miles for exotic plants, whose virtues may, perhaps, be far inferior to many of our own..." He prepared extracts, tinctures, and ointments from the roots, leaves, and berries of the ubiquitous pokeweed, testing them on dogs and compiling anecdotes about their effects "on the living body." He found that in spite of poisonous qualities pokeweed could cure ulcers, had value as an emetic and cathartic, and as a narcotic had advantages not possessed by opium.[1727]

Dr. Schultz forwarded a stream of communications to the American Philosophical Society on such subjects as a botanical mode of discriminating between esculent and noxious vegetables, on essential oils from native plants, on different temperaments, and on paper made from cotton refuse—none were accepted by the committee for publication. Barton, however, did attempt to aid him in the publication of a translation of a medical work. Shultz practiced in Hereford Township in Berks County and planted an experimental garden to test native plants for useful properties. His practice suffered from his frequent trips to Philadelphia for equipment; during one absence a fight among his hired hands resulted in most of his plants' being trampled. He borrowed $10,000 from seventy creditors and sold his

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1723 Barton papers, APS.

1724 Barton papers, APS.

1725 Barton papers, APS.

1726 [*Phytolacca decandra* L., 1762, refers to the earlier name *Phytolacca americana* L., 1753. IPNI.]

1727 Anonymous, *From Seed to Flower*, 47, illus. by William Bartram, p. 47. Linnaeus had earlier named the plant *Phytolacca americana* in 1753.

experimental garden in an effort to make ends meet. Unable to pay off these loans, Shultz was jailed. He was later released to the hard life of an ex-debtor.

Mitchell Tate of Washington City, Virginia, wrote Barton that "scrub grass," [Scouring Rush] presumably *Equisetum*, was used to scour pewter. Barton had delivered a paper, "Concerning the pernicious effects of the *Equisetum hyemale* or Rough Horsetail when eaten by Horses," at a meeting of the American Philosophical Society in 1798, and it was approved for publication,[1728] but was it published?

At one point Barton considered a memoir on native American dyeplants. His incomplete memorandum reads:

> *Dr. Bancroft says the American Golden rod* [Solidago]*...Mr. William Bartram informs me that the plant...Ixia celestina*[1729] *stains paper of a beautiful colour, which is very durable. He discovered it accidently.*[1730]

The effect of the "Great Hurricane of 1804" on fruit trees in the Charleston area, sent in a letter from Dr. Tucker Harris to Dr. Currie, was followed by Barton's inclusion of Bernard Romans's observations of the great hurricane of 1772 in West Florida.[1731]

Plant identifications for the public were naturally a frequent call upon Barton's time, yet such letters often contained original observations that Barton incorporated into his lectures or writings. More detailed than usual was the letter about "Devil's gut," Hedge bell, or Wild Morning Glory, *Calystegia sepium*, from Thomas Menninger of Lewistown, Mifflin Co., Pennsylvania, 31 December 1810:

> *Respected Sir;*
>
> *Having accidently got into my hands about a week since, your work entitled elements of botany; I have perused it with peculiar pleasure. Tho unacquainted with the smallest part of the science. An elderly gentleman...asked me if there was any account of what is commonly called the bell vine in it, upon my answering I had not found any; he so fixed my attention, by a statement of the nature of the growth of the root of it; that I determined on troubling you with a recital of it; the stock or vine extends to a length of thirty or forty feet, apparently of a strength equal to sound cord of its own size, its tendrils are proportionally strong; with which it lays most powerful hold on other vegetables &cr. as it progresses horizontally upon the earth: its leaves if I remember right, are of the colour of those of the common grape vine tho of a more elongated shape; it is in full bloom in wheat harvest, covered with a profusion of elegant trumpet shaped flowers; (I mean a speaking trumpet) from two to two & a half inches in diameter at the upper border of the flower, which is of the purest white as far as the beginning of the tube of the corolla, from thence, toward the lower part of the perianth; it is internally striated with the most delicate red: but the most remarkable thing is, that the root proceeds vertically from the surface of the earth downward, gradually increasing in size in its descent; until it reaches the subjacent water, as several well diggers have assured him; at the depth of forty feet below the surface, the root has generally been as thick as the calf of the leg of a full grown man; and still increasing downward: the stock is annual: it perishes with the first frosts of fall. But what must the root be? It grows in abundance among us, and is very troublesome to the reapers in*

1728 APS, "Minutes," 276, 278.

1729 [Recognized today as *Calydorea coelestina* (Bartram) Goldblatt & Henrich, Bartram's Ixia. IPNI. ITIS.]

1730 Barton, Botanical Notes, no. 9, APS.

1731 *PMPJ* 2 (1805) Pt. I: 53–58.

harvest time from its great strength and the firm hold its tendrils take, the stock is naked. The people in this part give it the same ludicruous name, which is in a note in your work said to be applied to the dodder 'Devil's guts,' perhaps from its root moving so sturdily 'ad infer[n]os.' However it amply repays for the trouble it occasions, by the elegance of its appearance after the grain is removed. It appears to me to delight most in a moderately dry soil, on the ascent of a hill, with a southern exposure, tho' it will grow less luxuriantly in other situations. It prefers a limestone soil...You will please to excuse my want of knowledge in the scientific language of botany: and my boldness in giving this perhaps troublesome account to you: if however it should prove a non descript, and add by a search after it, any further light to the delightful science, of which you are professor in that university which I call 'mea alma mater.' I will presume on your forgiveness. I am Sir, with the highest sentiments of esteem and respect Your friend and very humble servant.

Thos. Menninger

I have never noticed it after fructification, nor in progressing to that state visibly. I believe it to be of the family of convolvoli.

Answered.—I kept no copy of my letter.[1732]

Judge Richard Peters (1744–1828), farmer, and one of the founders in 1785 of the Philadelphia Society for Promoting Agriculture, now its president with Dr. James Mease the secretary, turned to Barton, who had become a member in August 1790. He sought assistance in promoting and keeping alive the Society's *Memoirs*.[1733] This journal had become a rich source of information on the practices and problems of the time, with contributions from many of Barton's acquaintances and correspondents. "*Turdus migratorius*" referred to the American robin; "*Turdus* &c" to other thrushes. The following may have been early notes to the "Bot. Editor" from Barton:

I know not that the berries of this smilax are eaten by any of the numerous species of birds, such as Turdus migratorius, Turdus &c which do severally devour the wild fruits of our country. I rather think they are not, since one always finds a great profusion of the berries which remain on the plants through the whole winter, and even pretty late in spring.

I beg you to make what use you may think proper to these few imperfect notices. Perhaps you may deem them, or at least some account of them, worthy of a place in some one of your scientific Journals. At all events, I should wait, with great impatience, for your own remarks on the subject. I hope I send enough of the berries to enable you to investigate the subject experimentally. I have the honour to subscribe myself, with very great respect, Sir, Your obedient & humble Servant

Benjamin Smith Barton,
Philadelphia May 1808.[1734]

1732 Barton papers, APS.

1733 Rodney H. True, "Sketch of the History of the Philadelphia Society for the Promotion of Agriculture," in its *Celebration of the 150th Anniversary* (Philadelphia, 1939). Its 23 early members comprised a number associated with Barton, for example, Shippen, Kuhn, Rush, and John Vaughan. Peters's portrait is included among the illustrations; James Mease opp. p. 29. Mease (1771–1846), physician, large landowner, was author of *Archives of Useful Knowledge* (Philadelphia, 1810–1813, 3 vols.). On Peters, James H. Peeling in *DAB*; on Mease, Joseph Jackson in *DAB*.

1734 Barton's copy, APS.

Peters's pleasure in anticipating articles from Barton appears in his letter from his home, "Belmont," near the west bank of the Schuylkill, to Barton 12 August 1808:

> *Dear Sir*
>
> *After seeing you yesterday I reflected with Pleasure on your Offer to assist us in our Agricultural Plan, by communicating, when you think proper, some Papers on, or connected with, that Subject. I repeat my Assurances that they will be highly acceptable. I am 'tis true, now of Opinion that I will have no more to do with Publications. But as I have no other Motive than that of serving an Interest I have much at Heart, 'tis likely my determination will end like a Sailor's, who resolves to stay on shore,—& goes to sea on the next Ship. I wish to make our Assotiation the Keepers of an Office of Agricultural Intelligence. I will most likely assist in this Obstetrical Employment. I have been obliged to write, as you will see by our Book, on Subjects, not out of Love, but Pity; —because nobody else would discuss them. I shall therefore cheerfully receive, & do all Manner of Justice I can to, the Productions of others: who supersede to the Necessity of my Ink shed.*
>
> *I did call on you once, to get some Botanical Information—but missed seeing you. I have failed, in some Instances, in my Endeavours to get Information and indirectly have been treated as if I were a Book maker, who decided to prowl for prey: & forestal the Fame or Profit of others. There never was a greater Mistake. But so things must be under the Moon.*
>
> *If our Book does no more than operate as a Teazer, & stimulate others, to increase & multiply: it will perform no small feat. If we could obtain materials for a quarterly Production, I shall advert to your Stint. But I fear our time of Gestation, will be much longer—to judge from the Period elapsed before our first-born came into the World. I hope however for the best. A Friend of mine was run hard, because no effects appeared from a long matrimonial Cultivation of an apparently fertile Soil. He said Mrs —— always went 3 or 4 Years. It was so; & after a long & seemingly hopeless Period,—a numerous progeny rewarded their Perseverance.*
>
> *yours with much Esteem*
> *R. Peters*[1735]

The first volume of *Memoirs of the Philadelphia Society for the Promotion of Agriculture* had appeared that year.

Barton's paper on the usefulness of moles to agricultural land was his response, and it appeared in 1810 in the second volume.

Weeds, their introduction, spread, and history in North America, became particularly interesting to Barton, although it was Judge Peters who alerted Barton to the noxious quality of Star of Bethlehem, *Ornithogalum umbellatum*. Barton was more concerned about "Hyacinthus," [*Hyacinthus botryoides*, now *Muscari botryoides*, the Grape Hyacinth] and Yellow toad-flax, *Linaria vulgaris* Hill, "Ranstead," a name used as late as the sixth edition of Gray's *Manual*. Caleb Ranstead was, according to Darlington,[1736] a Welsh resident of Philadelphia. Barton was less concerned about Bachelor's button, *Centaurea cyanus* replied to a query from Peters on 31 May 1809:

1735 Barton papers, APS.

1736 *American Weeds and Useful Plants*, rev. ed. (New York, 1859), 225.

To Judge Richard Peters
Dear Sir,

I am well acquainted with the 'pestiferous weed' of which you have sent me specimens. It is the Ornithogalum umbellatum of Linnaeus. I need not trouble you with the synomins of other botanists. The English books call it Common Star of Bethlehem. This plant is a native of Germany, France, Switzerland, Britain and other parts of Europe...also Asia. Though it is found sometimes apparently wild or native as about Germantown and in the vicinity of Grey's Ferry, &c. in many parts of the United States, I doubt that it be an indigenous plant. I think I have been told that somebody brought it into Pennsylvania. If this be proved, one might almost venture to engage in a declaration of war against that poor people.—You seem indeed to have good cause to deprecate the curiosity of the man, or men, who transported the weed into our country. Your feelings on this subject, must be a good deal similar to those of the farmers in the Neck, &c. who curse Caleb Ramsted for his curiosity in bringing the Yellow-Toad-Flax of the English into Pennsylvania.—Yet this plant has immortalized Caleb for it is known,—and I think best known,—by the name Ramsted Weed.—Tis true I have also heard it called 'Devil's Dung' and 'Polecat Weed.'

Until the receipt of your letter, I did not know, that the Ornitholgalum umbellatum is so much of a plague to the soil, as you represent it. Indeed, it has been rather a favorite of mine. I have delighted to meet with it in my botanical excursions, and have always pointed it out to my class, as a pretty plant for investigation: and have not neglected to mention its habit of sleeping for a time. You, no doubt, wish it were laid to Sleep for ever.

Then Barton defends the plant because no European author, and he lists a number, has mentioned its pernicious character of choking out other plants, but he admits that Peters has some basis for charging the plant with "crimes and misdemeaners." He continues:

You are certainly, however, in an error, when you suppose, that this little Star-of-Bethlehem is at one season the plant which you have sent to me, and at another time the Blue-Bottle, with flowers of an azure-blue colour, and of the shape of shot. I would just as soon believe, that Buonaparte and the King of Prussia are one and the same man, or that the fine Bridge which you have thrown over the Schuylkill is the self same thing as the ugly fabrick of rotten logs and boards at the Upper Ferry...The Blue-Bottle of which you speak is a species of Hyacinth, and if I dont much mistaken, the Hyacinthus Botryoides.[1737] *But the species I will not positively pronounce upon, until you favour me with a specimen of it. By the way, we are told by some of the European writers that some of the Hyacinths become direful pests in the field, gardens, &c. It seems very clear to me, that two very different plants are concerned in doing the mischief of which you complain. I really wish you would take pains to tell us which of them does the most. In the present State of my Knowledge on the subject, I must, indeed, plead for the Star of Bethlehem. Yet I fear, from what you say, that it is an evil star indeed. I am also confident that you will find it a matter of much more importance to eradicate Blue-Bottle than the white-flowered plant, or Star of Bethlehem.*[1738]

1737 [Referred to *Muscari botryoides* (L.) Mill., 1768, Grape Hyacinth. ITIS. TROPICOS.]

1738 Barton papers, APS.

Barton then suggests that *Ornithogalum* might be used for food—Pliny states that the Romans ate the boiled bulbs of some of the species. Then in a postscript he adds that "the Blue-Bottle which in April paints your fields, &c. with a fine blue," is different from the English Blue-Bottle, an annual, and is "Centaurea cyanus of the botanists" and common in "our gardens, but I think has not yet become troublesome in our fields." Barton does not say that he kept a copy of this long letter. He may have requested its return as he did of a few letters.

Peters found it necessary to remind Barton of his promise to contribute to the *Memoirs*, which he did with witty allusions. Indeed Judge Peters had the faculty of stirring Barton's sense of humor, so seldom evident in his letters.

> *Belmont 18 May 1810*
>
> *Dear Sir*
>
> *I meet with the Fate of every importunate Beggar. Charity is not like St. Januarius's Blood—liquified by Friction. I have bored you for some Things for our Book, which is fast progressing & wants Help. Miss Aitkins told me that you had tied round your Finger a magical String, which I was in Hopes would, as the Ring on the Lady's Finger of Addisons Creation, give you a Twinge, greater or less, when plighted Vows were broken or forgotten. Has this string never exhibited any Signs of Pulsation? If the lady or you were among the Minor Bipeds, neither the Ring nor the String would be worth talking about. Those who court Beauties, must lay their Account in a little Coyness. This applies only to the Lady.*
>
> *Mease is building a Barn—has a Book to compile—is a Cattle Show Man—& I have too much of the Agricultural Book in my Hands. I am a poor Book Maker—Appeals in Farmer Pauperis; want Help. Large Magnets have the most Attraction—large Heaps are encreased, when Mites are not worth Additions. All Sancho's Proverbs*[1739] *will not serve me, or I would quote them. Is not my Foe & your Pet, called Ornithogallum umbellatum?*
>
> *Richard Peters*[1740]

Barton's reply may well have been made during a chance meeting.

Musk, like strong-smelling castoreum from the preputial glands of beavers[1741] used historically in perfumes, lends an erotic note to the quest for new sources. The random occurrence of the musk-like substances in animals and plants intrigues biologists. The disappearance in the highly cultivated garden plants today of the former musk odor characteristic of the relative of the snapdragon, *Mimulus moschatus* Douglas, "Musk [Monkey] flower," which grew in Barton's greenhouse, is another curiosity. James Norcom's query of 20 April 1808, from Edinton, North Carolina, relates to the introduced European "Musk Mallow," *Malva moschata*, another scented curiosity:

> *James Norcom, Edinton, NC, to BSB April 10, 1808*
>
> *...Do you know such a thing in the vegetable kingdom as the musk-plant? we have such a one here which I never knew of before. Upon examining the flower, I find it belongs to the 5th Class, Pentandria Monogynia, is pentapetalous & has some peculiarities in the fructification*

1739 Ignatius Sancho (1729–1780), born at sea, was a Negro taken to England where he served as butler to the Duchess of Montagu, and later to the Duke of Manchester, but became a grocer in Westminister in 1773. Here he wrote letters in the manner of Sterne. *Letters of the Late Ignatius Sancho, an African* (London, 1782). Peters had read, perhaps owned, a copy.

1740 Barton papers, APS.

1741 [Appropriately taken from *Castor canadensis* as Kuhl named the beaver in 1820. MSW.]

which I am not altogether competent to describe–It is now in bloom, the flower opening about an hour or two in the morning & remaining closed for the rest of the day. I do not know that 'Musk-plant' is the proper name of this vegetable production; though it is certainly very expressive of its odour which resembles exactly that of musk, or the unsavoury emanations of the musk-rat–This difference, however, is very obvious: The odoriferous principle in the animal product is very volatile & diffusible, whereas in the vegetable it seems more fixed & confined–The one readily impregnates the air of a room & may be smelt at a great distance; the other must be brought near the nose & seems only to impart its specific scent to anything by contact. Whether their productions are similar to each other in more than their sensible properties, I have not been able to learn–If you have ever met with the plant or read a description of it, I will thank you for your observations on the subject; if you have not, You shall have the best description I can give of it, & a specimen by the first opportunity–I am, Dear Sir, with unfeigned esteem & respect Your most Obl. Servt & Sincere friend

Jas. Norcom[1742]

Did Barton reply?

Failing health prompted Dr. Richard Bowles of Goochland, Virginia, to retire from practice. He wrote to his former professor 8 May 1812 about the cultivation on a commercial basis of Castor bean, "Palma Christi," *Ricinus communis*; sesame, "Benni"; *Digitalis*; and Opium poppy[1743]:

I am the more free in troubling you...from the numerous offers made to your class...of any information which you could give in aid of such an object...You furnished me with a few of the seed of Digitalis which I sowed in June 1806: in the fall of 1807 they had produced a parcel of fine plants & were all destroyed that fall by a freshet. If you have any more on hand...I have commenced the culture of the Palma Christi...I am at present making the oil by expression only, tho wish to make it likewise by boiling as I find a few prefer the boiled oil...I have not been able to learn whether any work has been published on the manufacturing of this oil...I expect during the summer to have ready for market (from the seed of last year) about 2500 bottles. The neighbouring Physicians have purchased altogether of me for the last 12 months, but I wish to market 1500 bottles if I could in Philadelphia either this summer or when the students go on to attend Lectures in Nov. next...I have not been able to make it altogether as clear as the oil which I have lately seen manufactured in the state of New York by Mr. Hallock...

I am this year cultivating the Benni plant, the oil of which has been used in the south as a substitute of sweet-oil. I wish to cultivate the poppy...If you are in possession of information on the culture of this plant & the making opium from it...[1744]

If Barton answered, he seems not to have kept a copy.

1742 Barton papers, APS.

1743 [*Papaver somniferum* L., Opium Poppy. ITIS. IPNI.]

1744 Barton papers, APS.

Manure, the age-old fertilizer, appeared as a subject for Peters's essays in *Memoirs of the Philadelphia Society for Promoting Agriculture*, and in letters from Richard Peters Barton to his brother. Barton, suffering a lapse of memory, was under the impression that he had sent an account to Jefferson. Jefferson's letter of November 1805 explains "there is no mention in that or any other letter received from you of any paper on the subject of manure, nor have I the slightest recollection of such an one. I have searched too the place where I file away such papers, and do not there find such an one."[1745] These two book lovers, who were frequently exchanging personal copies, suffered as do modern book lenders: to whom was the copy lent?

[1745] Barton papers, APS.

Chapter XV

Building Bridges Between Medicine and the Natural World

"A private man may sow the seeds of science, but Public Benefactors must water them."
—Lord Bacon, quoted in *Monthly Anthology and Boston Review* 1 (1804): 308, regarding Waterhouse's lectures, unfinanced by Harvard.

American Linnaean Society and Philadelphia Linnaean Society

First called The American Linnaean Society, Barton's creation in 1803 firmly established a tradition of natural history societies in this country, although it did not long survive him and has passed unnoticed in today's annals of the growth of such societies. Yet it stimulated in an indirect way the founding of the Philadelphia Academy of Natural Sciences in 1812.

While a medical student at Edinburgh, Barton had joined the Natural History Society, which had been for four years a flourishing, although small, camaraderie founded by an earlier pupil, James Edward Smith. On 16 December 1786 Barton had been elected its President and as such gave his address on henbane. While visiting Smith in London, the founding of the Society and Barton's recent association with it were surely discussed, as well as Smith's second organization, the Linnean Society of London, which he had launched in 1788 soon after his fortuitous acquisition of the Linnaean hoard. Sir Joseph Banks had encouraged him to purchase Linnaeus's collections.

Since Smith's fortunes contrast so sharply with Barton's, they call for comment. Both had been medical pupils at Edinburgh, but Smith had enjoyed the stimulating botanical instruction of Dr. John Hope. Barton had missed Hope's lectures and influence by the professor's illness and death. Both, however, had benefited from the fine living plant collections of the Hope Botanical Garden. Smith had been twenty-two when he initiated the Natural History Society in Edinburgh; Barton was twenty when elected its president. Both had left Edinburgh without degrees.

William Forsyth, an apothecary at Chelsea, and four of his associates founded a Society for the Promotion of Natural History in London in 1782, the same year in which Smith had initiated his society in Edinburgh. Forsyth's society struggled along, meeting first in Mr. Dean's Corner House by the Turnpike, Pamlico, but moving many times. Dr. John Hunter joined in 1783, and Smith in 1784. By 1796, however, the society was "drifting into shallow water," and was soon extinct, and the founders were not distinguished for their later natural history record. Somewhat as a renegade club the Linnean Society of London was organized in 1788, its *Transactions* beginning to appear in 1791 with a roster of membership in the first volume. Fellowship in that celebrated society in the next hundred years would add an F.L.S. to hundreds of distinguished names.[1746]

On his visits to London in 1788 or 1789, Barton may also have talked of societies with Dr. John Coakley Lettsom, an encourager of many natural history delights. Lettsom had written to Humphry Marshall of Marshalltown, Pennsylvania, in 1787, likely after his receipt of Marshall's newly published *Arbustum Americanum*, suggesting an American society for the promotion of natural history. "Such a Society," he wrote, "established in Philadelphia, might

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1746 Gage, *Linnean Society*, 3.

be very important. A man of Dr. Parke's influence, with very few others to begin with, would excite emulation in your citizens, and give vigour and permanency to such an institution."[1747]

Dr. Lettsom here referred to Dr. Thomas Parke (1749–1835), a fellow Quaker, native of Chester County, Pennsylvania, who took an M.B. in 1770 under the guidance of doctors Shippen, Kuhn, Morgan, and Rush, then had further instruction in England and Scotland.[1748] "Try to commence these Societies," wrote Lettsom, "perhaps the English are not such enemies to you [referring to the recent war], but there might be individuals to aid your endeavours."[1749]

In a letter to Barton 20 December 1804 Lettsom repeated his call of 1787 for a natural history society to be established in Philadelphia. He pointed out that individuals might profit from scientific bodies that would foster exploration of the hidden treasures of nature, "that a Barton, like an Aublet, a Marshall, a Catesby, or a Bartram should be enabled to scrutinize the boundless vegetable and animal kingdom," so that with the aid of draughtsmen and analysts they could give us a natural history "perhaps unequalled in Europe."[1750]

Barton had already established the American Linnaean Society, among which only two of the ten founding members were not medical students. Seven were alumni of 1803, the year in which Barton had graduated more pupils than in any previous year; William Jacobs was of the class of 1801. The roster:

B. S. Barton, M.D., President
Thomas Walmsley, M.D., vice president
William Stephen Jacobs, M.D., vice president
John Grimes
John Stevenson Mitchell, M.D.
John Mumford Walker, M.D.
Thomas Massie, M.D.
John Wootton
John Richardson Young, M.D.
William Downey, M.D.
Robert Carter, M.D.[1751]

The Certificate of Membership (Figure 38), a printed broadside, bore a circle of the words "The Seal of the American Linnean Society," and within it another circle, "*Progenies Nova*" with, in the center, a twig of Black Oak with the empty cup of an acorn, and beneath the circle "Established 1803."[1752]

All these medical members had evident botanical interests, most having written theses on materia medica, with emphasis on plant uses described. The only documented meeting we found in Barton's time is that of 23 February 1803, which was noticed in the *Gazette of the United States*. The Society issued no periodical, although the necessity for an outlet for papers may have been a stimulus for Barton's assuming editorship of the *Philadelphia Medical and Physical Journal* (Figure 24), which appeared in 1804. There is no record of a society library,

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1747 Darlington, *Memorials*, 545, but Darlington in his footnote mistook Forsyth's organization as the more celebrated Linnean Society of Smith, of which, incidentally, Lettsom was not a member. Gage, *Linnean Society* 3–4, and Allen, "Edinburgh," offer incidental accounts of the Society, which was the "begetter of the Linnean Society."

1748 Butterfield, *Rush*, 654 n.; Ruschenberger, *Physicians*, 132–134.

1749 Bell, "Parke," 91.

1750 Barton correspondence, f. 76, HSP.

1751 Probably the son of Robert Carter of Nomini Hall, Virginia, the old family mentioned in the "Journal of Philip Fithian, 1773–1774," a tutor in the family. He reported that son "Bob was unsettled and clumsy" and "bright, slovenly, and lazy," *Amer. Hist. Rev.* 5 (1900): 299. Carter died in 1804.

1752 A copy among Barton's papers, APS. Simon Baatz has commented on the Society's history, *J. Early Republ.* 8 (1988): 112–116.

though members doubtless had access to Barton's own books. The society offered plant and mineral identifications, and Barton as always solicited specimens and observations. The early death of three of its ten founding members shadowed the success. Dr. Young and Dr. Carter died in 1804, and Dr. Walmsley, a particular friend of Barton, in 1806. The distinguished corresponding member, Joseph Priestley, elected in 1803, died on 6 February 1804. That Barton's pupils viewed their memberships in the Society with pride is suggested by their citing the fact on the title pages of their theses. Over the years William Darlington, John S. Mitchell, and C. E. Pendergrast, for example, documented their affiliation with the American Linnaean Society. Rev. James Madison of Williamsburg acknowledged his election to membership in October 1803 in a letter to Barton.[1753]

The name of the organization was altered by Barton three times in four years. On 6 June 1806 it became the American Botanical Society. James A. Mease in his account of 1811 missed the earlier backgrounds of the society when he wrote:

> *A number of young gentlemen, desirous to promote a knowledge of the vegetable kingdom; and assured of the advantages to be derived from it, in a philosophical, medical and agricultural point of view, met together and established a society, on the 6th of June, 1806, under the title of the 'American Botanical Society, held at Philadelphia.' Members were afterwards admitted from various parts of the union, from whom the society expected to receive specimens or drawings of plants, and communications respecting their character, and real or reputed medical or other properties.*[1754]

There had been the change back to the original name:

> *On the 4th of March 1807, it was resolved that the views of the society be extended to natural history, generally, and that it be stiled in future, the Philadelphia Linnaean Society. The constitution was altered, as circumstances rendered necessary, and Dr. Barton, elected president, who delivered the first anniversary oration on the 10th of June. The business of the society is conducted by a president, vice president, corresponding and recording secretaries, treasurer and two curators. A standing committee, consisting of sixteen members, and termed the grand committee, is annually elected, which is subdivided into three committees, to one of which are submitted all questions, essays, specimens, &c. relating to mineralogy; to the second, those relating to botany; and to the third, those appertaining to zoology.*

Samuel B. Smith was vice-president, Samuel B. Hopkins, treasurer, Philip Thornton, curator, and Samuel Hazard, secretary. Jacob Green (1790-1841), who was later to distinguish himself in chemistry, was attending the University of Pennsylvania gaining his B.A. in 1807. Had he attended Barton's botany class? He moved to Albany, New York, where in 1814 as "One of the Counsellors of the Society for the Promotion of Useful Arts" his article of 76 pages was published as *An Address on the Botany of the United States...to which is added A Catalogue of Plants indigenous to the State of New-York*. On the title-page he claimed membership in the "Linnaean Society of Philadelphia."[1755]

1753 Barton correspondence, f. 62, HSP.

1754 Mease, *Picture*, 304. Meisel, *Bibliography* 2: 123, gives the name "Philadelphia Botanical Society." Greene, "Mineralogy," 293, misses the earliest beginnings. Sellers, *Peale's Museum*, 213.

1755 Sabin, *Dictionary*, no. 28526; Goode, *Memorial*, 445, portr., pl. 38; Horace Baker in *DAB*; Wyndham D. Miles in *DSB*.

Discourse

Barton's inaugural "oration," as he called it, was "read before the Philadelphia Linnaean Society on the tenth of June, 1807." He insisted that he had not planned its publication but "was urged to pronounce it in a more public manner...The discourse, with all its imperfections, is now printed and published at the request of the Society which gave birth to it." On 18 August the title was deposited with Clerk of the District of Pennsylvania. It read: *A Discourse on some of the principal desiderata in natural history, and on the best means of promoting the study of this science, in the United States.*[1756] It was, in a sense, a summary of his observations to date, with suggestions of the many topics that needed further study. Barton hoped that the American Linnaean Society's "Transaction" could appear, "not immediately, but within the next three years," that an "extensive" library and museum devoted to minerals and plants would open, not meant to be in competition with Peale's.

The "Gentlemen" who had joined with Barton to reform the Philadelphia Linnaean Society, rendered homage, as he stated it in his "Discourse" at the meeting of 10 June 1807,

> *to one of the most illustrious cultivators of science the world has, hitherto, produced. Certainly no other man, neither in ancient nor in modern times, has contributed so much to extend our acquaintance with the external characters of the living world of nature, on this globe, as has Linnaeus. Endowed, by a beneficent Creator, with an uncommon portion of genius; warmed by an imagination of the richest kind; which, however, his correct judgment generally restrained within proper limits; blessed with the most persevering and virtuous industry, which enabled him to accomplish whatever schemes of usefulness or glory his sanguine mind may have devised;...the Naturalist of Sweden has assumed one of the highest stations in the throne of intellectual glory. I am far from being a blind idolater at the shrine of Linnaeus. I am not ignorant of the imperfections of his systems, or of the errors into which he has fallen. But...when we consider the vast compasses of sciences...these errors, I say, must be acknowledged to be few in number.*

Here had not Barton faintly stated his envy of a naturalist who had the health and financial backing to pursue "whatever schemes of usefulness" he wished? With Linnaeus as a guide, however,

> *...how vast, how new, how felicitous, is the field for observation! O let us not supinely pass our time, without calling into view the treasures of the world! and excuse my selfishness, if I urge you to make haste, that I, before my course is run, may know, through your labours, at least a part of which is to be learned of the natural history of these regions; that I may know that my fire is not too weak to animate some of you to these glorious pursuits of intelligence.*[1757]

With such enthusiasm displayed, is it any wonder that Barton stimulated a number of his students to record his influence on their turning to natural history? Barton edited his oration for publication, the preface dated 12 August 1807.

1756 Facsimile reprint in K. B. Sterling, ed., *Contributions to the History of American Natural History* (New York, 1974). Barton's use of the word "illustrations," in *Discourse*, 77, refers not to drawings, but to descriptive examples.

1757 *Discourse*, 71–73.

> *The Discourse, as it now appears, is, in several respects, different from what it was when I read it* [before the Society]. *Some few passages I have omitted in the publication; a greater number have been added; and a large part of the whole has undergone some variation, either in style, or arrangement. These, I think, are liberties which an author is, at all times, entitled to take with his own productions.*

Barton then considered the vastness of the unknown territory of the United States, and detailed the need in every aspect of natural history for study.

This very readable *catalogue raisonné* of American natural history embraces nine subject areas: 1) origin of Indian races, 2) migration of birds, 3) domestication of wild birds, 4) nature of amphibia, 5) nature of the genus *Crotalus*, 6) problems of icthyology, 7) problems of entomology, 8) of helminthology, and 9) of botany. Barton's enthusiasm for Indian lore placed it high among priorities. "Whatever relates to the physical history of the Human Kind is a primary object with the philosophical naturalist."[1758] One of the most important questions was the origin of the American Indian. He was convinced they had come from Asia, as had a number of animals.

Other topics included the torpidity of swallows. Barton noted that "harmful carnivores" may be exterminated, but "pernicious insects" are difficult to subdue. He suggested the use of the "potatoe-fly" (*Lyta vitata*), now known in the genus *Epicauta*, as a substitute for the cantharid beetles of the pharmacist. He also suggested that the ill-defined inclusive group "vermes" may include an intermix between zoology and geology, which he might denominate "Elminthology."

Under the botanical heading appears his long-standing interest in Sino-American discontinuous patterns of distribution, the latitudinal disparities later noticed in his *Geographical View*. "The annual rings of some of our largest trees" might show whether severe winters in Europe, America, and Asia have been the same.

What medical uses, some of which may be traced to Indian practices, reside unnoticed in our native plants, Barton queried. Senega snake-root and Carolina pink-root deserve further examination. He sees some possible culinary uses of the native ground-nut or potato-bean, tuckahoe, and especially the wild grapes [or *Vitis*] native to southern states. "In my botanical excursions, on my solitary rides, I never neglect to watch the appetite of my horse," for *Collinsonia canadensis*, for example. Of domestic interest are plant dyes, including pokeweed, the yellow wild indigo (*Baptisia tinctoria* as a substitute for Old World indigo [*Indigofera*].

> *Natural History, Gentlemen, is the object of our institution. This is a field so extensive, and with respect to this country, so interesting and so new, that none of us, whether our object be the usefulness which attends, or the fame which follows, science need extend our inquiries far beyond its limits.*[1759]

Barton had concluded his preface with:

> *If the hints which I have thrown out, in this Discourse, should be of any use to only one half of my pupils, now, so happily for science, settled in different parts of the United States, I shall feel quite satisfied. When they read it, I wish them to remember, that, in one respect, their opportunities and advantages have been greater than my own; for I have never attended any lectures, however imperfect, on Natural History, or Botany.*

1758 *Discourse*, 16.

1759 *Discourse*, 10.

Once again Barton was silently recalling his lament that Adam Kuhn, Linnaeus-trained, born in America, had given no lectures on botany, and that he, himself, had arrived too late in Edinburgh for inspiration and instruction from Dr. John Hope.

Barton concluded his *Discourse* by assuring members that he would have "a constant eye to this institution," but that his profession and the arrangement of his natural history materials for publication would keep him from devoting much of his attention to the organization, this in spite of his having been elected its president. (Was he influenced here by Jefferson's longtime presidency of the American Philosophical Society, although he was seldom in town for a meeting?)

> *I cannot but feel proud of associating myself with you: of attaching myself more firmly to those studies in the pursuit of which I have passed the happiest hours of my life; and of connecting myself, by still more endearing ties, to those of you, whom I have been so fortunate as to conduct to the first threshold of the study of Medicine, and of Nature.*
>
> *Permit me to close this feeble and imperfect address, by assuring you, how sensible I am of the honour you have conferred upon me, by electing me to the place of the first President of the Society.*

On 18 October 1807, Jefferson wrote Barton from Washington that he had received a diploma from the "Linnaean Society of Philadelphia," assuring the society of his "sensibility for this mark of notice," and regretting that he had so little time for science. He also thanked Barton for a copy of the *Discourse*.[1760] Two members from far-away Calcutta Botanic Garden were given membership in 1809: Dr. William Roxburgh and William Carey, D.D.

Three members of the Society, Samuel Hazard (1784–1870),[1761] merchant who made voyages to the West Indies and Mediterranean, the curator of minerals; Samuel Betton, Jr. (d. 1850), a pupil in Barton classes (M.D., 1808); and Samuel Colhoun, not identified, were signatories to a broadside in May of 1809 requesting members to "communicate observations on natural history particularly [of their own] neighborhood." The next paragraph suggests a problem some of the members may have voiced concern about: "It is not, by any means, our wish, to direct or to limit your inquiries." Had Barton been too overbearing in directing the members, and had he harbored too many of the specimens sent in? The broadside sent to Zaccheus Collins is in the collections of the Academy of Natural Sciences.[1762] A similar broadside was addressed to Barton, dated 18 May 1809, and is among his papers.

"Communications" were also solicited as papers to be read to the members. Barton was still hopeful of producing a flora for which he desired a wide representation of specimens, since he planned more than a mere catalogue of species. And now minerals also engaged him. Mease mentioned the *gratis* identification of plants and minerals submitted by the public. So as not to compete with Peale's Museum, animals were not mentioned.

> *The society has lately desired the citizens of the United States to forward specimens of plants and minerals, with such information respecting their application to useful purposes as they may possess. They will be examined, gratis, by the proper department; and it is hoped that, by means of this central deposit, much useful knowledge will be acquired respecting the natural history of our country, and many substances found, which from ignorance of their existence here, have hitherto lain dormant in*

1760 Lipscomb & Bergh, *Jefferson*, 11: 382–383.

1761 His father Samuel Hazard (1714–1758) had developed a mineral collection purchased after his death by the Library Company. It is mentioned by Franklin in letters to Richard Jackson, 6 June 1763, and 8 March 1764. C. Van Doren, ed., *Letters and Papers of Benjamin Franklin and Richard Jackson* (Philadelphia, 1947).

1762 Zaccheus Collins, f228, ANSP.

the earth, but which will now become extensively valuable in the arts and manufactures.[1763]

Officers for the year 1809–1810 were: President, Barton; vice president, Samuel Blair Smith (d. 1834); curators, John H. Lambert and Samuel Hazard; secretaries, Aaron Dickerson and Joseph Galloway Shippen (d. 1857); committees for natural history, Charles J. Wistar, Samuel Hazard, James Cutbush, Walter Channing, John H. Lambert, N. S. Allenson, Aaron Dickerson, Samuel B. Smith, Samuel Stuart, Benjamin Keighler, Archibald M'Kinney, Joseph G. Shippen, George S. Schott, Roberts Vaux, and Samuel Jackson. Along with this list published in the *American Mineralogical Journal* was the request for observations of one's neighborhood, "your remarks on any of the branches of natural history, we will always receive with pleasure."[1764]

W. D. Peck, of Cambridge, Massachusetts, recently returned from three years in England, France, and Sweden, was awarded a "diploma" from the Philadelphia Linnaean Society, and membership in the American Philosophical Society. The first honor may have been Barton's tardy amends for his lack of acknowledgement of Peck's contribution to his article "Some account of an American Species of *Dipus* or Jerboa" (1799). This little animal Peck had described in detail with a drawing in 1794. In his acknowledgement of the diploma Peck mentioned receiving plant specimens, unnamed, from Barton. Barton's letter, which possibly went astray, would probably have carried Pursh's identifications.[1765] Peck's letter of 23 October 1809, from Cambridge, after introducing Jacob Bigelow as a prospective student, reads:

Dear Sir,

Mr. Jacob Bigelow who will have the pleasure to present you this, has requested me to give him a line to You. He goes to Philada. as a Medical Student, & is desirous to avail himself of the great advantages which Your excellent establishments offer him. So entirely have I been occupied since my return from Europe, that I have had no time to devote to Correspondence &c the debt which I have long been under to You presses me the more, because I am at present unable to pay it.

I found a Packet from You at my return to Newberry with 20 or 30 specimens of plants numbered & without names, but no letter. Some of them were new to me. I was not able while there to examine them & have but lately removed my library & papers to this place. I will examine them as soon as I can devote a few hours to them.

I had the honour the last summer to receive a diploma from the Philada. Linnaean Society by Dr. Mussey,[1766] *I am also indebted to Your Philosophical Society; to both my acknowledgement shall be made in a proper manner, if I can find in looking over my papers any thing which can contribute to the general stock of natural knowledge, in which no observation is trivial if properly made. But as fame is not my object I must endeavour to be useful in cultivating a taste for Nat*[ural] *Histy. in our young men here.*

The nat. histy. of our own country or of that part of it called N. England & the cultivating of its indigenous vegetables is the prime object of

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1763 Mease, *Picture*, 304.

1764 *Amer. Mineral. J.* 1 (1814): 53–55; Greene, *American Science*, passim; Greene, "Mineralogy," 293–294; Greene & Burke, "Minerals," 38.

1765 Ewan, *Pursh Flora*, 23; Essig, *Entomology*, 7321, on the destruction of Peck's relicts; and Mary A. Day, *Rhodora* 3 (1901), on the herbarium of the Boston Society of Natural History.

1766 Reuben Dimand Mussey, a pupil of Barton's.

the institution here & my own particular aim; but my being obliged to attend to Zoology completely absorbs all the time which cannot be given to Botany. For two or three years I must devote myself to hard Labour & You must not think that I neglect or forget you.

I am, dear Sir, Your obliged & obedt friend & servant[1767]

Conspicuous by their absence from the Society's rolls, although having an earnest mineralogical interest, were the physicians Woodhouse and Coxe; Woodhouse's student, Robert Hare, and Wistar's student, Adam Seybert, probably the best informed on the subject.[1768] Four members who collected and even lectured on minerals, James Cutbush, Charles J. Wistar, Samuel Hazard, and Walter Channing, were supportive of Barton's own interests in mineralogy. Doctors Jacob Bigelow and Walter Channing, Barton's pupils, who founded the Linnaean Society of New England 8 December 1814, elected Barton an honorary member of the society he had inspired.[1769]

After Barton's death the following December, his nephew, William P. C. Barton carried on with the Philadelphia Linnaean Society, but not for long. He wrote Christian Henry Persoon 6 June 1816 of Persoon's election to the Society, also informing him that the University of Pennsylvania had established a "botanick garden" as an appendage to the medical school,[1770] and adding that he was sending Persoon a copy of his *Florae Philadelphicae Prodromus.*[1771]

Professor Franz Carl Mertens (1764-1831), zoologist at Bremen, was sent a printed announcement from "Linnean Hall" by the corresponding secretary, Aaron B. Tucker, and on the same day William P. C. Barton wrote informing him of his election to membership and taking the opportunity to mention his *Florae*, and suggesting an exchange of plant specimens:

Philadelphia Aug. 29 1816

Sir

I am directed by the Philadelphia Linnean society to inform you that they have elected You a member of their Association.

In enrolling your name on their list of foreign members, the society have designed to show the respect they entertain for your learning and botanical zeal and knowledge.

I am further desired by the society to inform you, that they will always be glad to receive any communication from you in the way of Botany or any other branch of science. Communications directed to myself, care of Buck and Krumbhaar Philadelphia, will at all times safely reach us.

I take this opportunity of transmitting you a copy of a Prodromus of a Flora Philadelphia published a few months ago. When the Flora itself is completed, it will I think, be more worthy of your notice, and I will then embrace the earliest opportunity after its publication, to send you a copy.

Should the Prodromus contain the names of any plants which you may be desirous of possessing, I will cheerfully send you dried specimens

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1767 Barton papers, APS.

1768 See fn. 19.

1769 Society's Corresponding Secretary, Boston, 12 Jan. 1815 to Barton, Barton papers, APS. Bouvé, "Boston Society," 4–14. The Society was dissolved in 1823, but revived in 1830 as the Boston Society for Natural History (Meisel, *Bibliography* 2: 222).

1770 The forty acres purchased for the botanical garden were never developed, and the land was sold. W. P. C. Barton used the area within the walls of the Medical School for growing plants until he left the University (Carson, *History*, 135).

1771 This copy is now at Leiden (see *TL-2*, 323). It was evidently issued as a very small printing. Copy in Tulane University Library.

> *from my Herbarium in exchange for any European plants within your reach. And indeed it will always give me pleasure to furnish you any specimens of any of our indigenus plants. With much respect and consideration, I am Sir, Your most obt. servt. William P. C. Barton*[1772]

The Society met on Thursday 17 October 1816 at "early candlelight," and on Wednesday the 23rd President W. P. C. Barton read "Some account of a plant used in Lancaster county as a substitute for chocolate, and which appears to be the *Holcus bicolor*[1773] of Willdenow's *Species plantarum*."[1774] The last notice of election to membership that we have seen was signed by President W. P. C. Barton and dated 21 February 1817, for Chief Justice of Pennsylvania, William Tilghman, at that time vice-president of the American Philosophical Society, and interested in agriculture and experimental plantings.[1775]

As members of the Philadelphia Linnaean Society fanned out over the country, or to the West Indies, most became too occupied with their medical practice to send rewarding letters of their observations, and few appear as authors of works on natural history.

That the founding of the Academy of Natural Sciences of Philadelphia in 1812 was *the* most important event in this formative period cannot be overstressed. Nevertheless, Barton's effort beginning in 1803 toward organizing the natural sciences, and possibly his intransigence, prepared the seedbed for the Academy's emergence. Of the seventeen persons who were early members of the American Linnaean Society (1803–1807), or the twenty-five of the Philadelphia Linnaean Society (1807–1811), very few joined the Academy. Among those who did were Z. Collins and Samuel Hazard. Two who did not join the Academy yet played roles in its development were Dr. Samuel Betton, who gave fifty dollars to it in 1826, and Dr. Samuel Jackson, who suggested the name that was adopted. Whereas the Linnaean Society had met in the medical school, a dispassionate arena for the cultivation of medical science, the Academy was considering the development of land forms and the source of fossils in relation to the Earth's history, and other such topics that ran counter to the story in Genesis. Although "neither religion nor politics...should be even alluded to at any meeting," there were those who believed the institution favored "religious infidelity." The Academy grew in membership even though there were those who feared that the association with "an atheistic body" would be hazardous. Dr. Samuel Jackson, for example, felt membership might prejudice his practice if "it were known that he belonged to a 'Godless' organization."[1776]

Without concluding which factor was most important in deciding the formation of a new society, there were these: a stronger public interest in the practical nature of mineralogy, a field stressed by the Academy; the search for "pay dirt" in the hills and dales of the Republic outdistancing the concern for new cures through materia medica; with increasing population there were more potential members—Philadelphia's population had increased to about 100,000 by 1812, members preferred meeting away from the environs of the medical school; lastly, Barton may have grown too overbearing and dictatorial, and he may have monopolized the contributed specimens. By the end of the first year the Academy's membership numbered forty-seven (fourteen resident and thirty-three corresponding). During 1813, the second year, the Academy elected thirty-five new resident members and thirty-four corresponding members. The first elected that year had been Dr. John Barnes (b. 1791), botanist, who became recording secretary 1812–1813 and 1814–1817, succeeding Dr. C. M. Mann, and succeeded by Edward Barton 1817–1819. Barnes and Dr. John Fothergill Waterhouse (1791–1817) presented the first series of popular lectures on botany "for the ladies of Philadelphia." Two-hundred ladies attended in the hall of the Agricultural Society.

1772 Hunt Institute for Botanical Documentation, Pittsburgh, fol. 6.

1773 [*Holcus bicolor* L. now *Sorghum bicolor* (L.) Moench, Broomcorn, Grain Sorghum. IPNI. ITIS.]

1774 *Gazette of the United States*, no. 6405, 23 Oct. 1816; the paper listed in Pritzel, *Thesaurus*, 443.

1775 Carson collection 3: 21, CPSP.

1776 Ruschenberg, *Academy*, 67–68; Phillips, "Academy," 267–269; Gerstner, "Academy," 177.

During the Academy's first year its meeting were held in available space in Mercer's cake shop, Speakman's apothecary shop, or in the front room above the iron-monger. The accumulating specimens and books—something that had not developed as expected in the Linnaean Society's sphere—called for larger quarters. In August 1815 the Academy moved to quarters leased from a member, the dentist Jacob Gilliams, and there it lodged until 1826. Conspicuously absent in the early days were naturalists; most members were professionals, "two doctors, a dentist, an apothecary, a manufacturing chemist, a distiller and maker of cordials, and a somewhat impractical young man scarcely established but with a passion for nature." That young man was Thomas Say, age twenty-five.[1777] Of the fifty-six authors who contributed 237 papers to the Academy's *Journal* from 1817 to 1842, Say contributed thirty-three, the largest number. Certainly the Academy's stressing expeditions was appealing, whether for lone members examining the pine barrens or serpentine outcrops, or for parties on forays to more distant fields for new discoveries, and the publication of results. Rubens Peale joined the Academy in 1813; his father Charles Willson Peale did not.

One important member of the Academy was William Maclure (1763–1840), a Scotsman who had first come to the United States on a business venture in 1782, then returned to London as a partner in Miller, Hart & Company. Having made a fortune, he was now able to devote much of his time to natural history, particularly geology, and, during his travels, to assemble a library and scientific specimens. In 1798 he had journeyed with Barton into western Pennsylvania, both accumulating scientific data. After his return to Europe in 1803 he wrote to Barton, the letters given in our Chapter XX. In 1815 he aided an ailing Barton by shipping his collections from London to Philadelphia.

In absentia Maclure was elected a member of the Academy in 1812, and in 1817 president. He had spent the winter of 1815–1817 in the West Indies with Lesueur whom he had engaged as cartographer-naturalist, and during the winter of 1817–1818 he joined other members, Say, Titian and Ramsay Peale, and George Ord, on a trip to Florida for specimens. From about 1824 until 1827 Maclure lived in New Harmony, but in 1827 he visited Mexico and died in San Angelo 23 March 1840. Through Maclure's genial personality, international recognition, and his generosity through his successful business ventures, he enriched the Academy's holdings, sponsored activities financially, and gave to the Academy a stability[1778] that Barton could not for the societies he had founded.

Philadelphia Medical and Physical Journal: Bridge Between Medicine and the Natural World

On 10 February 1804 Barton signed the dedication of Part Two of his *Collections*. The same day he concluded his sixteenth lecture in natural history "by a very curious account of an uncommonly sagacious, cute, witty, and rational crow, by Mr. William Bartram whose veracity is not to be questioned." Bartram had sent Barton his "Anecdotes of an American crow," and Barton published it in his new *Philadelphia Medical and Philosophical Journal*, the title page illustrated in our Figure 24. Writing 18 February in answer to a query from Barton on Jumping mice, Bartram inquired of his "esteemed Friend" about the health of the Barton family and added "My Frd. I think it long since You have been with us. I am as ever have been, Yours Tr." Barton's obligations were becoming more burdensome, and the older man felt a certain neglect. Bartram wrote to share a loss, adding appreciation and a hope:

1777 Weiss & Ziegler, *Say*; Leland O. Howard in *DAB*; E. N. Shor in *DAB*.

1778 For Maclure bibliography of thirty titles see Hazen & Hazen, *Literature*, 250–251. Gerstner, "Academy," esp. 174 and 181; Morton, *Maclure*; George P. Merrill in *DAB*; George W. White in *DSB*. John S. Doskey, *The European Journals of William Maclure* (Philadelphia, 1988), portr.

My Dr Friend

I am constrained, to write this one Letter that will be afflicting to you knowing Your regard for our Family, & particularly for the Young Man my nephew John, he is deceased. His ameable disposition, gentle & pleasing manners, indeed rendered him a friend to every one who knew him. cut off early in Life, torn from a branch like a Fruit almost arrived to a state of Maturity: I repeat with pain of heart, & tears that cannot be suppressed. Cut off torn from his disconsolate Father by the Grim Herculean Enemy of the Human Race, Ardent Spirits.

My D. & most esteemed Frd. which next to the preceeding shakes my Heart, knowing the regard & protection which you have allways, according to promise, given to James Bartram. You have sown the seeds of Virtue & morality in his Heart. As well as the most useful knowledge. When now become Useful to you & in some degree perhaps capable of repaying Your Friendship & care for him, is under the necessity of leaving You, at least for a time, to assist in relieving his Parent now almost sinking under the weight of grief's Paternal sensibility. A my Dear Friend do not, I pray You withdraw your Friendship—paternal regard—for the youth. I know You regard me with partial Friendship & esteem [.] transfer that same regard to James when I am gone to the World of Spirits.

It is a long time since You have been to see Us. Pray come when convenient. I am as always Your Frd & c.

Willm Bartram

Kingsess March 7th 1804[1779]

On 15 May Darlington recorded in his journal:

There was no lecture. We went to Mr. Hamilton's superb garden in the afternoon, and had a demonstration of many rare plants. Among others a specimen of the Canna in flower...This was the third excursion we have had—the other two were to Mr. Bartram's garden, where there is a numerous collection of plants.[1780]

On 6 June Barton wrote Sir Joseph Banks that Humboldt had recently returned from South America with rich collections, and has discovered the tree that yields Angostura bark.[1781] On 2 August Barton "went to Bartram's."[1782]

This was the year, 1804, in which he saw his contribution to Pinkerton's *Geography* published; enjoyed his visit with Humboldt; met Alexander Wilson; and finally saw a number of his papers in print with the initiation of his own *Philadelphia Medical and Physical Journal.*

The potential sale and use of collected theses to be issued as annual volumes was considered by the medical faculty at the turn of the century, influenced surely by Mitchill's favorable review of Horsfield's paper, and his suggestion that worthwhile theses should be gathered and preserved. In May 1801 a committee appointed Barton and Woodhouse to select and edit the first volume. Thomas Dobson, "principal bookseller in Philadelphia" was engaged as printer and publisher, and an edition of one thousand copies was planned. In a meeting of the Medical faculty in 1803 it was decided that the physicians of Philadelphia and environs would benefit from the establishment of their own medical journal, seeing the success

1779 Barton papers, APS.

1780 Fitzpatrick Collection, Kansas University.

1781 Dawson, *Banks Letters*, 37.

1782 Barton papers, APS. Attached to Amos Gregg letter of 13 August 1805.

of *Medical Repository,* founded in 1797 in New York. It would draw attention to the medical school, keep physicians alert to medical progress, be an outlet for their papers, and permanently preserve chosen theses. There was, possibly, the usual dissension between opposing factions in deciding the form of the journal so that two journals resulted. Barton's *Philadelphia Medical and Physical Journal,* which appeared first in 1804, accepted natural history as well as medical articles. John Redman Coxe brought out his *Philadelphia Medical Museum,* in which he planned to accept only medical papers, in 1805. Caldwell, not being a member of the faculty, but practicing in the city, may not have been informed of the change of plans, or may not have agreed with them, and so ran afoul of both Barton and Rush. Enterprising Caldwell, seeing that by May 1804 nothing had appeared to carry out the plan to publish theses yearly, and because of what he felt to be an unfortunate combination of "exceedingly indolent" Woodhouse, and "busy and hurried...negligent Barton," he approached publisher Dobson to ask whether he was going to carry out the original plan. Dobson gave the impression he had given up. He evidently had not informed Caldwell that he had already contracted with Coxe to publish his journal. Dobson was later to explain:

> *Philadelphia June 16, 1804*
>
> *To all Whom it may concern*
>
> *I do hereby certify that some weeks before Messrs. Thos. & Wm. Bradford issued proposals for publishing a new Work to be entitled Medical Theses, Dr. Caldwell called at my house and had some conversation with me on the subject. I declined engaging in it, & mentioned to the Doctor that so far back as May 1801 according to the best of my recollection I had agreed with Drs. Barton & Woodhouse to publish a volume of that kind which I had understood was to have been selected by the College of Physicians; but that so long time had elapsed during which no part of the Materials had been put into my hands by the Gentlemen that I now consider myself completely released from the engagement which had been made but never fulfilled on their part, and that I would not now engage in it were it again proposed to me. Thos. Dobson.*[1783]

Caldwell had not consulted Barton or Woodhouse, but in May of 1804 he proceeded to sign a contract with John and William Bradford, who proceeded to procure type and paper. Their intention to publish a volume of medical theses was announced under "Literary Notices" in the local *Poulson's American Daily Advertiser,* a notice that Barton and Woodhouse may well not have seen. On hearing, at a booksellers' gathering in New York, that a committee of the faculty of the medical school in Philadelphia had engaged a Mr. Maxwell to publish a like volume, Bradford and Maxwell called on Barton to learn of the situation. The Bradfords' account of the progress of the scheme, and Barton's wrath vented on the innocent Bradford on hearing of it, follows:

> *Phila. 2d July, 1804*
>
> *To the Medical Professors in the University of Pennsylvania.*
>
> *Gentlemen, Having engaged in the Publication of a Work, which it appears You have long contemplated Publishing by a Committee, but who never came forward, even with their Proposals, untill after We had announced ours to the Public.*
>
> *In order that some accomodation may take place, We are induced to state our Reasons for undertaking the Work: as also our Wish that you may reconsider Your Vote for Publishing the same.—Sometime in the*

[1783] Thomas Dobson, Philadelphia publisher who put out 60 "scientific books" from 1786–1800. Barton papers, APS.

beginning of May Dr. Charles Caldwell intimated that a Selection of the best Theses would answer to Publish a Volume, & that He would have no objection to Edit it.–Knowing that Mr. Mathew Carey had nearly four years ago announced the same to the Public under the Superintendance of that Worthy Student of Medicine Mr. Lee, and was prevented going on with it in consequence of the Professors stating that they intended to Publish them under their own Eye, We were induced to enquire of the Proposed Editor whether the Professors had abandoned it; the Answer we received was satisfactory to us, that the Work was abandoned, if not by a formal Vote, at least by a total neglect of over four Years, during which Period no intimation was given to the Public that the Work was intended to be Printed. The Answer we allude to are that of Mr. Thomas Dobson (a Copy of the Certificate of which we now enclose for Your perusal) as also the declaration of one of Your Committee to the Editor that the work would never be done.–Satisfied that the Work was abandoned by the Professors, and in this View only, We intimated in Poulson's Paper the latter end of May in a Literary Notice that we intended issuing Proposals for Printing of the Work: in about 5 days after We issued Proposals, have contracted for the Type & Paper, received subscriptions, & have engaged the first Houses in Baltimore New York & Boston to push the Work.– Thus situated, about the middle of June our William Bradford went to attend the Annual meeting of the American Company of Booksellers, on his Return Mr. Maxwell a brother bookseller informed him that a Committee of the Professors had made application to him to engage in Printing & Publishing a Volume of Theses. Our astonishment can be better conceived than expressed!

Upon consideration We agreed to go together to see the Committee to endeavour to accomodate the business accordingly We Waited on Dr. Woodhouse who was not at home, We then went to Dr. Barton's, Mr. Maxwell introduced the business, but before it was fairly open'd Dr. Barton behaved in a Manner So rude & ungentlemanly that our William Bradford was obliged to leave the Room in order to prevent himself from making use of Conduct that he might have been sorry for afterwards. For Proof of the Above assertion We refer You to Mr. Maxwell.

Upon the Word of Men of Business & honor we assert the foregoing Statement to be True.

Now we would ask why did not the Committee of the Professors inform the Public during the space of these Years that the Work would be Printed! Why did they not inform us between the time of issuing our Proposals & the Literary Notice? Why did they leave it until We Were absent and the first Notice to be given through the Person whom they wanted to engage to injure us? Had the Committee come forward before We had gone as far as We had done and informed us that the Professors had not abandoned Publication, but that it was owing to their Neglect or some other Cause, We should with Pleasure have given up our Pretensions.–Permit us to ask what object have the Professors in View? Pecuniary it cannot be, What then? It must be to hold out an incentive to the Industrious Student, that if he Produces a good Thesis it will be recorded in the Annals of Medical discoveries made in America and not sink into Oblivion, the fate of all pamphlets. Permit us also to assert that in Addition to our Pecuniary Views, We entertain the same & engage to continue the Work as long as the Public think it worth their Patronage. Now how can this best be carried into Operation, whether by a Bookseller who has engaged in his Interest the most Respectable Houses in the

Union, or by a body of Men no way connected in the business of Bookselling. And we think moreover that he Had not issued Proposals, Your Committee would have lain still Dormant. We are justified in this Opinion by the time and manner in which the announcing to the Public was made.—

From the above Review we hope You will take into consideration the Propriety of reconsidering Your Resolution & Thereby refrain from injuring a Bookseller who had the Honor of the Institution in View & would never have engaged in the Work had it not been expressly understood that it was abandoned by the Professors.—It would meet our Wishes if You Would Appoint a Committee to confer with us on the Subject, in order to Reconcile our Jarring Interests, which no doubt can be done with Honor to the Professors.—In hopes of an early answer We Remain Yours &c Thomas & Wm. Bradford[1784]

Caldwell on 27 June had left his account with the physicians, certifying "that some time toward the close of 1803, Dr. Woodhouse, signified to me in unequivocal terms...that a volume of medical theses, to the selection and superintendence of which Dr. Barton and himself had been appointed by their colleagues, the Medical professors...would never be completed." The occasion was "a failure on part of Dr. Barton to comply with an engagement [with Woodhouse and Caldwell] in conducting a work somewhat on the plan of Medical Repository." Caldwell then despaired that Dr. Woodhouse, "who may visit Italy in the summer of 1804," will be able to meet the "confinement and drudgery of an editor."[1785] Although Caldwell and the Bradfords wished the medical faculty to cooperate with them, the faculty had its own plans. The Bradfords issued a circular-proposal in February 1805, and Caldwell's *Medical Theses,*[1786] volume one, appeared in the autumn.

Rush had promised, according to Caldwell, that copies of his *Medical Theses* would be recommended to his classes, and his promise was carried out for the first volume. The Bradfords brought out the second volume the following year, but "looking, as usual for low motives in high places,"[1787] Caldwell insisted that Rush broke his promise and declined even to mention Caldwell's second volume in order to mollify Barton and the rest of the medical faculty. Caldwell asserted the requirement that pupils' theses be printed was dropped as a result of the altercation.[1788] It may have been, however, because of the two new Philadelphia medical journals.

"Theses may be published, if the candidate desires it," ruled the faculty,[1789] and so after 1806 fewer theses were published. Dr. Crawford of Baltimore wrote Barton in 1811 that he believed that by an "imprimatur as a solemn act of your Regents, you would give an additional stimulus to genius and industry [if you required publication]. If you leave it to the students, indolence or timidity, without such an excitement to overcome them would prevent any thing valuable from appearing."[1790] Such prominent pupils of Barton as Walter Channing, Frederick Muhlenberg, C. W. Short, and John F. Waterhouse, did not have their theses published. Oral examinations and certificates were requested as tangible evidence of attendance in the courses, even though students failed to establish mastery of a subject.

1784 Barton papers, APS.

1785 Carson, "Collection" 3: 48a, CPSP, loose sheet.

1786 *Medical Theses, selected from among the inaugural dissertations...in medicine of the University of Pennsylvania* (Philadelphia, 1805-1806, 2 vols.), Austin, *Imprints*, 397.

1787 Corner, *Two Centuries*, 52.

1788 Caldwell, *Autobiography*, 169-172.

1789 Carson, *History*, 118; memorandum, Trustees, University of Pennsylvania 6 Jan. 1807, to Faculty. Barton papers, APS.

1790 Barton papers, APS.

The need for the medical school and physicians in this leading city to have their own journal was a point of pride as well as convenience. New York had its *Medical Repository* established by Samuel Latham Mitchill, Elihu Smith, and Edward Miller in 1797. It continued until 1814. The *Baltimore Medical and Physical Recorder*,[1791] founded in 1808, lasted only until 1809, and in 1811 Nathaniel Potter issued a proposal for the establishment of the *Baltimore Medical Lycaeum*, but it did not succeed in gaining sufficient support. The *Charleston Medical Register*[1792] was founded in 1803 by David Ramsay. In London Tilloch's *Philosophical Magazine* appeared in 1798, but it continued only a few years before combining with William Nicholson, *A Journal of Natural Philosophy, Chemistry, and the Arts*, which had appeared the year before, and which has continued under title variations to the present.[1793]

That two journals would be launched in Philadelphia showed a lack of unity within the medical school. The animosity and keen rivalry between Coxe and Barton, and Barton's well-known propensities toward natural history as well as medicine were the primary reasons for two journals, both of which carried financial burdens there was not the readership to support. Most of the medical faculty contributed to Coxe's journal, but in its last years, after the demise of Barton's *Philadelphia Medical and Physical Journal*, it accepted agricultural and natural history contributions. Keen was the competition to be published first. The title page of volume one of each carries the date 1804, although Coxe's *Philadelphia Medical Museum* contains articles signed with the date 1805. Acknowledging the receipt of a prospectus for *Philadelphia Medical and Physical Journal*, and a first number, Nathaniel Potter,[1794] who had taken his degree under Rush in 1796, wrote Barton, "Attention of Dr. Cocke" on 18 December 1804, wondering whether there was room for two such journals in Philadelphia. Benjamin Silliman in launching his *American Journal of Science* in 1818, still published today, may have had Barton's and Coxe's short-lived journals in mind when he wrote on page four of his Introduction:

> *Even a failure, in so good a cause (unless it should arise from incapacity or unfaithfulness) cannot be regarded as dishonourable. It may prove only that the attempt was premature, and that our country is not yet ripe for such an undertaking, for without sufficient support of talent, knowledge, and money, it cannot longer proceed.*

Coxe's title page reads "*The Philadelphia Medical Museum*, conducted by John Redman Coxe, M.D. Vol. I. Philadelphia, Printed by Archibald Bartram, for Thomas Dobson, at the Stone House, no. 41, South Second Street.—and for sale by the Booksellers in Different Parts of the United States. 1804." His "Address to the Physicians of America" is dated Sept. 17, 1804, but his preface is dated May 20, 1805:

> *...The Editor may be permitted to congratulate his Medical Brethren, on the flattering prospect which two additional periodical publications must necessarily produce in the science of medicine throughout the extensive regions of America. When it is considered that but a few years have elapsed since the first work* [Medical Register?] *we cannot but regard it as*

1791 Austin, *Imprints*, 109.

1792 Austin, *Imprints*, 447.

1793 Henry B. Shafer, "Early medical magazines in America," *Ann. Med. Hist.*, n.s. 7 (1935): 480–491, reports that between the founding of *Medical Repository* (Austin, *Imprints*, 1257) and 1850 there appeared 117 titles. Although he notices *Charleston Medical Register* and *Philadelphia Medical Museum*, he failed to notice Barton's *Journal*. Suzanne M. Schultz and M. Sandra Wood in "Medical journals of Pennsylvania before the Civil War," *Trans. & Stud. Coll. Physicians Philadelphia* ser. 5, 5 (1983): 244–270. Mention of Barton's *Journal* is made in F. Martí-Ibáñez, *History of American Medicine* (New York, 1959), 95–118.

1794 Nathaniel Potter (1770–1843) wrote on the medical properties of arsenic and its deleterious effects, and in 1818 a memoir on contagion, especially of yellow fever (Austin, *Imprints*, 1558–1560; Kelly, *Cyclopedia*, 285).

> *highly characteristic of the increasing energy of our scientific researches. The approbation which this work has already received, cannot but prove highly grateful to the Editor...*

Volume 1 (1805) was dedicated to John Redman, Coxe's grandfather; Volume 2 (1806) to Philip Syng Physick, 1 March 1806; Volume 3 (1807) to Benjamin Rush, 1 January 1807. For Volumes 4/5 (1808), 6 (1809), and New Series 1 (1811) Coxe had given up on dedications. An advertisement in *Monthly Anthology and Boston Review* for 1 August (1804) announced the *Philadelphia Medical Museum* "to contain original communications of the histories of diseases and remedies, essays upon chemistry, natural history and other branches of science." No editor was announced.

Despite the resumption of Coxe's journal in 1811, another with greater emphasis on foreign medical news was established and survived from 1811 until 1820; *The Eclectic Repertory and Analytical Review Medical and Philosophical*, under the editorship of a "Society of Physicians," and published by Edward Earle in Philadelphia. Barton made no contributions to this journal, nor was there any eulogy for him in it, although there had been for Rush.[1795] Rush contributed a paper as had James Cutbush, John Syng Dorsey, Philip Syng Physick, and Nathanial Chapman with his "Some account of the use of Polygala senega,"[1796] although most of the papers were republication of European works. The announcement of the publication of *American Mineralogical Journal* (1810) was repeated from the *Edinburgh Review*. William P. C. Barton's book on marine hospitals was reviewed.[1797]

Matthew Carey and associates in New York and Virginia considered themselves the publishers of Barton's *Philadelphia Medical and Physical Journal*. Carey announced that papers contributed should be sent to the publishers, but most seem to have been sent directly to Barton, who added his own comments to many. Barton's aim in assuming the editorship of the journal was given in the first volume in his "Advertisement."

"The First Part of the [*Journal*] is, at length, presented to the public. The Editor submits it to its fate, with a hope that it will not be received with more indifference than some of his other publications, of which the reception has been too favourable and flattering." Of his own papers and "fragmentary rubbish," he thinks himself qualified to form a pretty correct judgment. They are not, perhaps, of much consequence, they are thrown together without much regard to order, and nothing like neatness or elegance of style...but they may be useful. They may contain facts...which in the hands of others, may serve as the basis of regular essays, if not of durable systems: they sometimes "start a game," which by better huntsmen than himself, may be pursued to advantage. "The Second Part...may be considered as the first annual gift of the Editor."

Each volume was to be composed of two parts, divided usually in four sections, but the pagination of the sections was continuous. The four sections were planned to be:

1. Original Communications relative to all the branches of Medicine, Natural History, and Physical Geography.
2. Biographical sketches of the lives of eminent Physicians and naturalists, especially those of the last half of the eighteenth century and of the present one.
3. Reviews of, and Extracts from, new publications in Medicine, Natural History, and Geography, especially those that have been published in the United States, or that have a particular reference to this tract of country, &c.

1795 *Ecl. Repert.* 3 (1813): 515–522.
1796 *Ecl. Repert.* 2 (1812): 90–101.
1797 *Ecl. Repert.* 4 (1814): 352.

4. Miscellaneous Facts, of various kinds, all, however, relating to the expressed object of the work.

Of the papers contributed by others "there are some which would not be deemed unworthy of a place in any similar production." Volume One "will contain at least four hundred pages"–there were three hundred seventy seven of text. The subscription was two dollars annually, or one dollar a part, bound in blue boards.

Barton longed for recognition from the Maecaenas of British botany, Sir Joseph Banks. His dedication of volume one to Banks, dated 13 November 1804, reads in part:

> *But my personal acquaintance with you, the advantages which I have derived from your correspondence...To you, sir, I am, certainly, indebted for a portion of what little reputation I may have in life; for a portion of that happiness which I have ever enjoyed from the cultivation of science; a happiness which can only be conceived by those, who, like yourself, have attached themselves to the amiable pursuits of Natural Science.*

An undated holograph labeled "Medical. Advertisement for..." probably referred to the "favour" Mitchill and Miller received:

> *The general plan of the work is intended to be similar to that of the Medical Repository of New York, the London Medical and Physical Journal, the Edinburgh Annals of Medicine, &c. that the journal will be published every three or every six months, as may be found convenient for the Editor, or most agreeable to the encouragers of the work; and that the first number or part, is already nearly prepared for the press.*[1798]

In volume two, part two (1806), after dedicating the volume to his pupils, Barton wrote:

> *...Peculiarly happy do I consider my own lot: since with equal attachments to the science of MEDICINE, to which I have been brought up, and in which I am to continue for the remainder of my life, I have attachments (increasing attachments) to other Sciences, those of NATURAL HISTORY and BOTANY. It has been my fortune to behold almost the EARLIEST DAWN of the sciences in Philadelphia...Even in the hours of my sickness or my pain, I look forward with complacency upon the future improved state of Medicine and Natural History in the United States; and when told, by the frequent message of illness, that my continuance will not be long among you, I can feel rich in the prospects that are opening to my view.*
>
> *...You will live to see the FALL, you will, I hope, assist in hastening the fall, of some of the present Systems or Arrangments, of* [animals, vegetables, minerals]. *By enlarging the stock of useful facts...you will prepare the way for those more permanent systems...*
>
> *...BE USEFUL TO YOURSELVES, YOUR COUNTRY, AND THE WORLD.*
>
> *Your friend and fellow-student, etc.*
> *Philadelphia, December 2d, 1805.*

1798 Barton papers, APS.

Mitchill and Miller received news of the competitive publication in generous spirit, for Miller wrote Barton on 6 October 1804:

> *I did not receive your favour announcing your contemplated periodical publication till some days after the printing of our last number...It shall be inserted with great pleasure...We are convinced your publication & ours may be reciprocally serviceable to each other; we shall be glad to consider ourselves as fellow-labourers with you in the same causes; and we shall not fail to make known to our readers the confident expectations and intentions of the excellence & usefulness of your intended work. Accept my assurances of the highest esteem & respect, and of the cordiality with which I am Your,* [&c.][1799]

Mitchill confided to Dr. Joshua S. White of Savannah, a contributor to *Medical Repository*, on 12 February 1805, that "by the liberal Spirit and talents of our countrymen materials flow in plentfully, and we may say we have plenty of water to keep our mill going."[1800]

Impatient to see volume two, part two (1806) of his production off the press, Barton nettled Conrad, who responded:

> *J. Conrad presents his compts to Dr Barton & acknowledges the reciept of his note of last evening—he has to observe that Dr Barton has his answer already as to the time when the Journal could be commenced, the last time he had the pleasure to see Dr B. he told him that paper & the printer would be ready on the 20th July and they were both ready on that day—JC. is sorry D Barton had the trouble to call several times without seeing him. he is frequently out but never long at A time & was not informed that DB had called. he is sorry too that it should be thought necessary to demand in so formal a manner what had been before agreed upon and what he believes he never shewed any disposition to deviate from—The paper is ready and Mr Palmer if it is agreeable to Dr Barton will wait on him tomorrow for copy or it may be sent to Mr Palmer. Mr Tallon has left the translation, which JC will wait on DB with, tomorrow or next day. tomorrow if he can possibly have time.*
>
> *Tuesday July 25 1806*[1801]

The *Philadelphia Medical and Physical Journal* leaves us a record of the state of natural history, of medical thinking of the time, and of the participants. Although it has received little mention in literature reviewing early periodicals, Rafinesque wrote in 1817 that after Mitchill's *Medical Repository*, Barton's journal came second, and that it contained "many valuable tracts."[1802] To many of the articles Barton added his own comments or additions. Barton's articles are noticed in our bibliography of his writings, although throughout the journal are shorter notes and book reviews, only the more substantial of which are included in the bibliography. Barton announced his intended works: his "Prodromus of a Flora," his "Elements of Zoology," "A Geographical Account," "Animal Instincts," etc. He included short biographical accounts, as of Banister, Clayton, Vernon and Krieg, Linnaeus, Walmsley, and his beloved brother Matthias Barton, and he announced others.

The *Journal* ceased with the publication in 1809 of Supplement Three, his publisher, John Conrad and Company, almost bankrupt. The financial straits imposed by growing

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1799 Barton papers, APS.

1800 Carson "Collection" 3: 145, CPSP.

1801 Barton papers, APS.

1802 *Amer. Monthly Mag. & Crit. Rev.* 2 (1817): 85.

problems with England may have been a factor, but Barton's assuming further responsibilities in the University, his chagrin at the lack of financial backing, and the lack of progress he was making on his proposed "Flora" and other projected works, his medical duties, and his health, all played a part. The number of potential readers and subscribers for a journal designed for that audience was inevitably, at that period in the United States, quite limited.

Editing his own journal would be a means for Barton's expressing himself in his own way: his papers would not be subjected to the delay of consideration and criticism for "worthiness of publication," by less sympathetic members of the American Philosophical Society, whose *Transactions* had been his chief outlet and which was unable financially to keep publication regular. He may have hoped, with Tilloch, Nicholson, Mitchill, and other editors, for a satisfying financial return. He still had debts from his medical school days to repay, but he seems always to have been optimistic about clearing a profit from publishing and oblivious of all the costs.

As would be expected, Barton related botany more closely to medicine than did Coxe and most of his contributing physicians. Barton also had a broader interest in the affinities of man and other animals. This is shown in his notes "Facts and speculations relative to the diseases that are common to human kind, and other families of animals."[1803] As Coxe predicted, much of the material related to natural history or agricultural concerns, but these, especially in later volumes, also crept into Coxe's *Journal*. Doctors Woodhouse, Griffitts, Baldwin, and Benjamin and John Rush sent their articles to Coxe. In the first volume (1805) Rush reported on the use of sugar of lead in curing leprosy. Coxe commented in this first volume with muffled scorn on Barton's natural history interest: "As the various branches of this pleasing study are pursued with great industry by the professor; we may hope in a few years to have a copious reservoir of all that is interesting to our country in this department of science."[1804]

There was, however, method in Barton's wider interest. In his *Collections*, xi–xii, he had written, "I certainly do not repose implicit confidence in the half of what which is said concerning the powers of medicine...How are we to know what plants are proper for the purposes of medicine until we have examined a great body of vegetables." Toward this end he constantly solicited information from correspondents.

The first article in Barton's *Journal* is "Notice of Epidemics of Pennsylvania and New Jersey in the years 1746, 1747, and 1749," the information of John Bartram "the father" contributed by William Bartram.[1805] Later in volume one Barton records Bartram's "large collection of letters to these, and many other celebrated men, in the possession of the Editor," many damaged by "ravages of time...parts of some of these are irrecoverably lost."[1806] From the letters of one valued correspondent, and his first medical contribution, Barton included "Some account of the Autumnal Bilious Fever of the Atlantic-side of Virginia. In a letter to the Editor from the late Dr. James Greenway, of Dinwiddie County, Virginia, March 8, 1794."[1807]

An early contributor was Dr. Amos Gregg, Jr., who sent his manuscript from his place of residence, the Borough of Bristol. He discussed two mineral springs, their appearance, their uses by Rush, who had first analyzed one in 1773, and his own skepticism. "I am too much of a Skeptic to acquiesce without good proof in the truth of every tale concerning the power of Medicine...I think it more rational to ascribe some of the advantages said to be derived from drinking the waters to the change of situation and exercise the patients are necessited to use at the time." Gregg also discussed the diseases of the area, describing one that he is sure is not contagious: it sounded like yellow fever. He found that most of the patients who survived it

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1803 *PMPJ* Suppl. 3 (1809): 266–288.

1804 *Phila. Med. Reg.* 1 (1805): 238–239.

1805 *PMPJ* 1 (1804) Pt. 1: 3–5.

1806 *PMPJ* 1 (1804) Pt. 1: 119–120. "Life and Character of John Bartram." 4 ff holograph of William Bartram is among Barton's miscellaneous papers, box III, APS.

1807 *PMPJ* 1 (1804) Pt. 1: 8–10, with no comment from the editor.

had not been bled. He referred to Dr. De Normandie's analysis of the water read before the Society 20 September 1768, and published in the Society's *Transactions*. He mentioned his father "A. Gregg," and Dr. Mahlong Gregg, and ended his account with "You are Sir at liberty to make what use you please of these imperfect pages—to curtail or suppress."[1808] Barton characteristically added a supplement. William Bartram criticized Gregg's description, and Barton added comment and agreement with Bartram's note.[1809]

Notes "from the MS journal of the Reverend Dr. A. Green of Philadelphia. 1800" on warm and hot springs of Bath, Virginia,[1810] followed Gregg's article, and later in the volume "Notices of Sulphur, Sweet, and other Mineral Springs in the western part of Virginia, from the same MS Journal."[1811] This was the paper, the manuscript of which was sought by Alexander Wilson for publication in *Port Folio*, but which Barton could not locate. Sulphur Springs was in Green-Briar County, west of the Alleghanies, sixteen miles from Sweet Spring. Buttermilk Spring was a hundred yards from Sweet Spring. Red Springs in Bottatout County was a mile from Sweet Springs with Red Springs in the same county and four hundred miles from Philadelphia, and about two miles from Sulphur Spring. Bishop Madison had given Barton notes on the chemistry and the effects of the waters, and Barton added information on accommodations available for those wishing to stay for the waters.[1812]

In the same issue Barton included Richard Peters Barton's letter of 28 May 1804 on the use of plaster of Paris as a manure in Virginia.[1813] There also appeared Frederic Detlief Meyer's "Account of the most successful method of treating yellow fever in St. Thomas," the main part of the treatment being rubbing with olive oil. Most of his patients survived. He concluded his article "I think I have observed the highest degree of malignancy in those patients who have exhibited the greatest fears of the disease. And permit me to add, that the man who should discover the means of eradicating from the public mind the terrors inspired by the Yellow-Fever, would deserve as much of mankind as Dr. Jenner has done by his happy introduction of the Vaccine disease."[1814] Meyer also communicated observations from Dr. Johann Daniel Herholdt of the University of Copenhagen on the use of obstetrical forceps.[1815]

Dr. John B. Young reported that he had cured tetanus in a six-year-old boy by the use of mercury. The boy, he stated, made a "full recovery."[1816] Andrew Ellicott of Lancaster, Pennsylvania, forwarded a letter dated 30 November 1795 from a friend "On the digestive power of the Pike (*Esox*). The stomach had contained the bones of a squirrel's head with teeth intact."[1817] With a little encouragement, on December 1804 William Bartram contributed a "Description of an American species of *Certhia*, or Creeper," with a drawing of the bird by his niece, Anne Bartram, engraved by S. Seymour.[1818]

A tribute to Heckewelder appeared after his article "Meteorological Observations, made at Gnadenhutten, on the River Muskingum," 20 May to 20 October 1800; and 19 December 1804–20 January: "the same ingenious and respectable correspondent, to whom he is indebted for many important facts and observations relative to Indian inhabitants, the animals, vegetables, &c. of North America."[1819] Dr. W. Currie forwarded two letters from Dr. Kollock, Cumberland Island, Georgia, both of which Barton published. One, "Medical Facts and

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1808 *PMPJ* 1 (1804) Pt. 1: 15-22. Letter among Barton papers, APS.
1809 *PMPJ* 1 (1805) Pt. 2: 133.
1810 *PMPJ* 1 (1804) Pt. 1: 24-30.
1811 *PMPJ* 1 (1804) Pt. 1: 148-151.
1812 *PMPJ* 1 (1804) Pt. 1: 152-155.
1813 *PMPJ* 1 (1804): Pt. 1: 86-87, the paper having been read before the APS 15 June.
1814 *PMPJ* 1 (1804): Pt. 1: 11-14.
1815 *PMPJ* 1 (1805): Pt. 2: 144.
1816 *PMPJ* 1 (1804) Pt. 1: 47.
1817 *PMPJ* 1 (1804) Pt. 1: 103.
1818 *PMPJ* 1 (1805) Pt. 2: 103. *Certhia* is reproduced in Cruickshank, *Bartram*, opposite p. 203.
1819 *PMPJ* 1 (1805) Pt. 2: 134-142, 143.

Observations," contains notes on "Inflammatory fevers," on blistering, and that doctors in his area seldom use emetics, rather cathartics; and about the fevers of summer and autumn. Currie noticed the "deleterious effects of Spigelia Marilandica" in cases of overdose—an intoxicating incoherence, headache, vertigo, pains over the eyes, pupils enlarging. After sleep and some time, the patient recovered.[1820] Currie also gave to Barton John Spengler's account of "Epidemic fever" at Yorktown, Pennsylvania, the letter signed 26 December 1804.[1821] James W. Stevens contributed on the "Use of Issue [draining] in the cure and prevention of sores."[1822]

From Thomas Massie, M.D., London, 1 February 1805 came a letter on "trephining," smallpox, and a report on the use of vaccine.[1823] "Notes by the Editor on a case of Hemmorhage" was an addendum to an article by Dr. George Williamson of Baltimore, on the internal use of acetate (or sugar) of lead. Barton refers the readers to older writers. He mentions lead with opium and ipecacuanha.[1824] Barton also commented on hydrophobia, suggesting tobacco juice. Dr. Branneman of Lancaster had found that an "injection of tobacco juice had sometimes helped in tetanus by relaxing the patient, & that hydrophobia in several respects bears a similarity.[1825] Dr. Rush's valedictory followed.[1826]

"Miscellaneous Facts and Observations" contained many new tidbits: Cuvier had sent notes on fossil opossums and "Elephas Americanus."[1827] [1828] "The very respectable and ingenious Dr. Samuel Brown of Lexington, in Kentucky, informs the editor that there has recently been discovered, in one of the nitrous caves...the cranium of a large species of *Sus*, or Hog...With the exception of the Mexican Hog, or Peccary,"[1829] no "native" is found in North America. "The Peccary is said to be common *trans*-Mississippi." Barton predicts that fossil rhinoceros will also be found in North America.[1830] Reported were notes from Lewis's specimens, all in Peale's museum, and there was a report of a panther[1831] from William Dunbar.[1832] Among other reports Professor Fabricius wrote from Kiel in 1805 on bird specimens he sent, and that "almost all amphibious animals,[1833] the tortoise excepted, live by preying on other animals." Pride in such European associations surfaced again in the very personal way in which Barton introduced this correspondent:

> *For the following highly interesting communication the Editor is indebted to his good and learned friend, Professor C. D. Ebeling, of Hamburgh. The date of the Professor's letter is October 9, 1804, but it was not received before the month of July, last. It is believed, however, that not a little of the information thus communicated, will be found new and acceptable to our readers.*

Ebeling had written:

1820 *PMPJ* 1 (1805) Pt. 2: 69–74.
1821 *PMPJ* 1 (1805) Pt. 2: 75–77.
1822 *PMPJ* 1 (1805) Pt. 2: 77–78.
1823 *PMPJ* 2 (1805) Pt. 1: 181–182.
1824 *PMPJ* 2 (1805) Pt. 1: 96–100.
1825 *PMPJ* 2 (1805) Pt. 1: 122–131.
1826 *PMPJ* 2 (1805) Pt. 1: 131–135.
1827 [Later known as *Mammut americanum*, Mastodon.]
1828 *PMPJ* 2 (1805) Pt. 1: 155–157.
1829 [The Collared Peccary, *Pecari tajacu* L., 1758. MSW.]
1830 *PMPJ* 2 (1805) Pt. 1: 158.
1831 [*Puma concolor* L., 1771. MSW.]
1832 *PMPJ* 2 (1805) Pt. 1: 159–160.
1833 *PMPJ* 2 (1805) Pt. 1: 165.

> *Our Literature is still very fruitful; certainly too much so. We compare it to a herd of rabbits, which increase, and ruin the land in which they whelp...Happily the study of real History begins to gain ground.*[1834]

Aside from plant remedies came articles on medical procedures, and a number of these appeared in volume two, part two. For example, James Robertson of Nashville, Tennessee, sent "Remarks on the management of the Scalped Head" to Felix Robertson of the same place, 10 April 1806, and Robertson forwarded it to Barton. James Lyons, M.D., described treatment of a strangulated hernia and a child who had swallowed a nail. Dr. Thomas Hewson of Philadelphia was present when Dr. William Stork of London died and was dissected. His appearance was described on pp. 37-41. Dr. John A. Casey of Georgia reported on a "Remarkable tumor of the face." Dr. Samuel Cooper of Philadelphia found an *Ascaris* in the abdominal cavity of a dog. Dr. Amos Gregg, a most faithful reporter of so many observations on plant remedies, contributed a note on rheumatism. Then came a "Sketch of the Medical Topography of the Military Trace of New York, in a letter from Dr. John H. Frisbe of Camillus" to Hosack, which was communicated to the editor through Dr. Wm. Currie.[1835]

The dream of establishing a thriving silk industry was illustrated by a communication on the treatment of the silk worm sent by Robert Lowry from Siena, Italy, to Jefferson, who forwarded it to the American Philosophical Society, and which Barton published.[1836] Barton had preceded this with a letter of David Palmer to the late Edward Penington, dated Philadelphia 29 June 1747.[1837] The Rev. Nicholas Collin contributed "Annecdotes of Linnaeus," stressing Linnaeus's religious attitude toward nature.[1838] Dr. James Cutbush furnished a review of a Palerma work on vaccination.[1839] Conditions for the Megallanic Premium were included.[1840]

One of the most important, yet often overlooked, contributions was from Barton's former pupil, Peter Custis, who accompanied Freeman on the expedition to the Red River. His letter to Barton was from Natchitoches, Louisiana, 1 June 1806. Barton published it in September.[1841]

More medical material appeared in volume three. Dr. James Haynesworth of South Carolina wrote on the use of what is a puzzle today, "Jester-weed," as a cure for rattlesnake bite. He followed this with his use of *Polygala senega* Walter for yellow fever.[1842] Dr. Davidge of Baltimore commented on Dr. Dewees's textbook on the human uterus.[1843] Dr. Daniel Drake, then of Mays Lick, Kentucky, reported on the endemic diseases there.[1844] Dr. P. K. Rogers of Philadelphia tried tobacco juice on a case of tetanus,[1845] and Isaac Heylin of Philadelphia described a tumor of the lung.[1846]

Emphasizing what to him was a favored field, Barton included a letter all the way from St. Petersburg, Russia, telling of Pallas's trip to the "Frozen Sea" and the discovery of the mammoth.[1847] Bishop Madison sent him material that he incorporated in his article on

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1834 *PMPJ* 2 (1805) Pt. 1: 194-199.
1835 *PMPJ* 2 (1806) Pt. 2: 27-87.
1836 *PMPJ* 2 (1806) Pt. 2: 90-99. [The Silk Worm is the larval form of the moth *Bombyx mori* L., 1758. ZOOBANK.]
1837 *PMPJ* 2 (1806) Pt. 2: 89.
1838 *PMPJ* 2 (1806) Pt. 2: 129-133.
1839 *PMPJ* 2 (1806) Pt. 2: 171.
1840 *PMPJ* 2 (1806) Pt. 2: 193.
1841 *PMPJ* 2 (1806) Pt. 2: 43-50.
1842 *PMPJ* 3 (1808): 57-61, 138-142.
1843 *PMPJ* 3 (1808): 61-85.
1844 *PMPJ* 3 (1808): 85-90.
1845 *PMPJ* 3 (1808): 138-142.
1846 *PMPJ* 3 (1808): 155-159.
1847 *PMPJ* 3 (1808): 120-137.

elephantine bones.[1848] Dr. Job Wilson wrote to Dr. Samuel Benezet, who sent the letter on to Barton on the good effects of *Geranium maculatum* for hemorrhages.[1849] Ephraim Elliott sent a communication from George C. Shattuck of Boston on the "Effects of Camphor" on the human body.[1850] In the same supplement John M. Floyd, M.D., of Virginia, contributed "On the Efficacy of Blisters" in cases of gangrene. To the uses of medicinal plants contributed by Dr. Thomas D. Price of Jerusalem, in Virginia, Barton added his own comments and a reference to his *Collections* and to notes published earlier in Supplement One.

The *Journal* not having received a viable number of subscriptions, Conrad and Barton abandoned it. Barton now concentrated on getting other works into print, particularly his "Flora Americana."

1848 *PMPJ* Suppl. I (March, 1806): 22–35.
1849 *PMPJ* Suppl. III (May, 1809): 263–266.
1850 *PMPJ* Suppl. III (May 1809): 216–220.

Chapter XVI

Toward a *Flora Americana*

"There is a passage, by gradual and intermixing characters, from species to species, from genus to genus."
—Barton in *Discourse*, 20

Some Contributors

John Lyon (1765–1814), a Scot, and Aloysius Enslen, an Austrian who came on behalf of Prince Lichtenstein, moved in and out of Philadelphia on plant hunting trips into the southern Appalachians, Enslen as far south as New Orleans. Lyon arrived in Philadelphia in about 1796 and was employed by Hamilton at the "Woodlands," but in 1803 he set up his own nursery sales in London from assembled collections of the rarer trees and shrubs desired by British fanciers.[1851] From the several surviving memoranda Barton made of conversations with Lyon, whether at the growing gardens or Barton's home, it is clear that their meetings were mutually valued. Lyon shared dried specimens with Muhlenberg, but only one specimen, *Collinsonia anisata*, which Lyon himself had recognized as novel and "curious," is today in Barton's herbarium.

As was his custom for persons of whom he approved, Barton generously provided Lyon with letters of introduction, for example to Dr. David Ramsay of Charleston. Of Lyon's visit, December 26, 1802, until January 8th, Ramsay wrote to Barton:

> *Charleston February 7th 1803*
> *Dear Sir,*
> *I thank you for the pleasure of Mr. Lyon's company. I have furnished him with letters to sundry Gentlemen on his route. I esteem him as a worthy modest well informed man. I am always pleased when such strangers bring me letters of introduction.*
> *I rejoice that you propose to pay me a visit this spring. Our climate is very variable & particularly so in March & April. Nevertheless I trust your health would be mended by a temporary residence in Charleston in the spring. I send you a pamphlet which will give you some slight idea of our season in the year 1802. One year is much like another.*
> *If you would come prepared to give a couple of lectures on botany I believe you would find a respectable class who would rejoice in the opportunity of attending. I am with great regard & esteem. Your most obedient svt.*
> *David Ramsay*[1852]

Barton was never able to visit Charleston and Dr. Ramsay. Lyon visited Charleston again, and Savannah in 1804, and returning to Philadelphia in April, gave Rev. Muhlenberg a packet of seeds and some plants when the Lancaster botanist visited him. "He has made a noble

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1851 Ewan, "Lyon," 6.
1852 Barton papers, APS, "Bot. Notes, No. 7."

collection of southern plants and deserves all praise," Muhlenberg wrote Dr. John Brickell, "and he did, what hardly any of my travelling Friends, have done, he let me have some of the specimens."[1853] During the summer of 1805 Lyon was detained in Philadelphia caring for his holding garden pending a ship to convey his plants to England. During July he paid Barton a visit, after which Barton jotted the following notes on the back of an envelope:

> *July 1805 Mr. Lyon assures me, that he has discovered in great perfection Michaux's large acorn Quercus in Virginia, near the forks of Potomack, about xx miles from Ft. Cumberland & he thinks the large acorn species at Nazareth is different from this.*
>
> *He says the Viburnum Lantanoides of Michaux, is called 'trip up' & 'Hobble-Bush' & that it is to be found on the mountains between Nazareth & Wyoming,* [Pennsylvania].
>
> *He has seen the Ball-grape as far south as any of the species, on St. John's River, in Georgia. He says this species is distinguished remarkably by one character, that its epidermis always adhers & never splits like the other species. He spoke of this as a very proper character upon which to found a specific name.*[1854]

Before Lyon left for England on Sept. 9, he again visited Barton, who noted:

> *August 18, 1805—Mr. Lyon is confident that Aiton's Rhus elegans is a mere variety of Rhus glabrum.*[1855] *He has seen it, & it is dioicous. He is persuaded that it is the Rhus pumulum*[1856] *of Michaux which poisoned him, so very severely, when he was to the southward.*[1857] *He thinks the aromatic Rhus, in Bartram's garden, is not a Rhus but a new genus.*

During 1807 Lyon, according to his own account, traveled 2,500 miles plant hunting in Tennessee, the Carolinas, and Georgia, his expenses $190. He reported to Barton on February first, 1808, Barton jotting down the principal points:

> *Mr. Lyon assures me that he has seen in Georgia, Magnolia grandiflora, about 100 feet high, and 5 feet in diameter. He says it appears to him to be the largest of the American trees, unless perhaps Cupressus disticha. He has not observed this noble tree to be north of Charleston but he has been told it ascends as far north as the North Carolina line. He says at Charleston it is by no means in such perfection as it is further south, nor is it so great at Savanna, or to the south of Savanna. He never saw it more than fifty miles from the sea-coast, and he considers it as a maritime or submaritime tree. He thinks Tillandsia usneoides is very much disposed to grow upon the Magnolia, in beautiful festoons, along the coast. He...* [sheet torn off at this point].[1858]

Attesting to his informant's botanical awareness is Barton's memorandum dated 17 May 1810:

1853 Muhlenberg papers, HSP.

1854 Barton papers, APS.

1855 [*Rhus elegans* Aiton is indeed a synonym, submerged in *Rhus glabra* L., the Smooth Sumac. IPNI. ITIS.]

1856 [*Rhus pumila* Michx., now *Rhus michauxii* Sarg., False Poison Sumac. IPNI. ITIS.]

1857 Ewan, "Lyon," 28, Sept. 2 and footnote 126, and, 29, where Lyon mentions his encounter, then the effects of the poisoning.

1858 Barton papers, APS, "Concerning Bartram's garden, etc."

> *Mr. Lyon told me today that he knows only 3 species of Sarracinia [sic, Sarracenia], viz. Michaux's 3, first.—S. psittacina [sic, psyttacina] he does not know. He thinks Bartram's Pensacola species must be a fifth different from any of Mr. Michaux's. Lyon says the S. variolaris is common in all the low country of S. Carolina & Georgia, and he thinks it less of an aquatic than purpurea or flava, growing more on the edges of swamps, or as he also expressed himself, more on the firm land. S. flava, he thinks, is more aquatic than S. purpurea. He said, it grows either in the water, or among the grass-tussocks, which are in the water. He remarked that it is a much larger plant than the purpurea, or variolaris; & they grow in less sheltered situations than S. purpurea.*[1859]

A receipt among Barton's papers is dated "Blockley, May 25, 1808 for 165 ft. rafters ordered by Mr. Lyons sent by John Sathbough, pd for by Barton $18.25, including $1.05 for 'halling' [hauling] charge, to Nathan Jones."[1860] Was this for a lath-house for one of Lyon's growing gardens for shade-loving Appalachians, this time at Blockley, which is now part of Fairmont Park?

Felix Robertson had taken his M.D. degree with Barton in 1805 and had set up practice in Nashville. According to Lyon's journal, Barton had provided him with a letter of introduction that he handed to Dr. Robertson on 24 June 1807. Robertson soon thereafter forwarded to Barton a small packet of seeds and acorns requesting that he share some of the acorns with Mr. Lyon, adding "compliments to Mrs. Barton."[1861]

Back in Charleston in 1809, on a clear cold day in February, Lyon accompanied Dr. Ramsay, his wife, and Stephen Elliott on a visit to the declining holding garden that André Michaux had fostered just outside the city. Another note of 5 August 1811:

> *Mr. Lyon says he is well acquainted with Michaux's H[ibiscus] grandiflorus, & that we have nothing like it in our parts. He has never seen it except in the islands on the coast of Georgia...He says he doesnt know H. virginianus*[1862] *nearer to Philadelphia than along the Hackensack causeway.*[1863]

In December of 1811 Lyon took passage on the *United States* bound for Liverpool, carrying a letter to William Roscoe, a prime mover in establishing the botanical garden in that city:

> *Philadelphia, December 14 1811*
>
> *Sir,*
>
> *Mr. John Lyon, a native of Scotland, who has resided during several years in the United States, and who is a very intelligent Botanist, and an indefatigable collector of plants, will hand you this. Mr. Lyon goes to England,—in times I fear rather unpropitious to the easy success of his business—with a large collection of American vegetables, many of which, I have reason to believe, have not hitherto, appeared in Britain. Permit me to introduce this gentleman to your attentions, during his stay in Liverpool, assuring you most confidently of his skill in the practical parts of Botany,*

1859 Barton papers, APS. "Botany Notes, No. 7"

1860 Barton papers, APS, Receipts Box IV.

1861 Barton papers, APS.

1862 [*Hibiscus grandiflorus* 1857, Swamp Rosemallow. *Hibiscus virginianus* L., now *Kosteletzkya virginica* (L.) C. Presl. ex A. Gray, Rosemallow. ITIS. TROPICOS.]

1863 Barton papers, APS.

and of his great moral worth. It was Mr. Lyon's wish to have sailed directly for London; but this he has not been able to do. I flatter myself, that he may meet with some encouragement for the sale of his plants, among the liberal cultivators of botany in Liverpool, and its vicinity.

Mr. Lyon will put into your hands two copies of a small work, the perusal of which may, perhaps, amuse you in an hour of leisure. I beg you to accept of one of the copies, and to present the other, in my name, to one of your public literary institutions.

With very great respect I am, Sir,
Your obedient, &c.,
B. S. Barton[1864]

Barton continued to benefit from Lyon's gatherings, some set out on a plot rented from the nurseryman, David Landreth (1752–ca. 1828).[1865] He wrote in his "Botanical Notes":

May 27, 1813. Halesia diptera [Two-wing Silverbell] *is now in flower at Landreth's in open ground. I saw it yesterday & examined only two flowers, one had 8, the other ten stamens. May 29, I counted at Landreth's 3 flowers; two had 8, & one 9 stamens. In open ground at Landreth's, in flower, a Berberis which Mr. Lyon brought from the Cherokee country.*[1866]

Concerning his *Elements*, Barton noted on 25 May 1814:

Mr. Lyon informed me to day that Muhlenberg's Hopea montana is a distinct species which he discovered upon the mountains of North Carolina. He says it grows not in the vallies but upon the sides of the hills & is a smaller plant than the H. tinctoria.[1867] *He did not recollect the specific differences. It is also a tinctorial plant.*[1868] ["Hopea montana, sp. nova" appears in Lyon's broadside Catalogue of 1812.[1869]]

Although Hamilton's garden under Lyon's care as his gardener came to the peak of its richness and beauty, Hamilton did not treat him with the professional respect he would have found in Britain, and so Lyon, like Pursh, was unhappy there, and turned to plant hunting for sales in Britain. However, he returned to the "Woodlands" for a period in 1805 while Hamilton sought a replacement for Pursh. Lyon died in Asheville, North Carolina, probably of typhoid fever. The younger David Landreth remembered him as an amiable, well bred, intelligent man of most sterling worth.[1870] "Botanical science has sustained a loss in the recent death of Mr. John Lyon. This worthy man was a native of Scotland, where & in England, he acquired the kind of practical gardening and made some progress in botany," so Barton began an unfinished biographical account left among his miscellaneous papers.[1871]

Barton was to meet two Philadelphia visitors on 7 March 1803. They bore a letter from Sir Joseph Banks, President of the Royal Society:

1864 Liverpool Public Library, Roscoe Manuscripts.
1865 Ewan & Ewan, "Lyon," 64; Anonymous, *From Seed to Flower*, 69.
1866 Barton papers, APS.
1867 [*Symplocos tinctoria* (L.) L'Hér., Sweetleaf, Horse Sugar. IPNI. ITIS.]
1868 Barton papers, APS.
1869 Ewan, "Lyon," 56.
1870 Ewan, "Lyon," 8.
1871 Barton papers, APS.

Soho Square, Dec. 31, 1802

Dear Sir

The Bearers of this letter Mr. Enselen & Mr. Vandershot are Travellers for the improvement of the Sciences which you & I Equely admire & Cultivate Botany & Natural history, Mr. Enselen under the Command of the Emperor Mr. Vandershot under the order of Prince Lichtenstein.

As nothing Can tend so immediately to the improvement of our Feverite Sciences as the Patronage of Powerful & Rich Personages Enabling these who are diligent & well informed to pursue the bent of their inclination in visiting distant Countries, it is extremely desirable that these gentlemen meet in the Countries they visit such Freindship Comfort & assistence as Can be procurd for them, I therefore take the Liberty my dear Doctor of Recommending them to you whose well known hospitality & kindness to strangers will I know induce you to Receive my Recommendation with favor & I beg to add that as I take a Particular interest in the Fortunes of these Young men, from them I expect much on their Return, I shall feel myself under Particular Obligation for every Civility & assistance you are so good as to Confer upon them. I beg Sir that you will believe me with Reel Esteem & Regard Your Faithful & Obedient Hble Servt.

Jos. Banks[1872]

Pursh had known Enslen in Europe, and probably conducted him around the "Woodlands." There are forty-five Enslen specimens in Barton's herbarium labeled either by Enslen himself, or by Pursh. Aside from the specimens in the Museum in Vienna, this is the largest series extant for this critical collector. The living plants assembled in his Philadelphia holding garden may have been transported to Schönbrunn Gardens, Vienna, by van der Schot, who made several trips between Philadelphia and Vienna.

Enslen was obliged by another friend of botanists. With news of Barton and Rafinesque, Muhlenberg wrote to John Brickell in Savannah introducing the traveler, his letter dated 1 March 1804:

> *I did myself the Pleasure to write a Letter to You some time ago in answer to your last circular Letter to Ds Barton, Mease, Mr. Rafinesque and myself...D. Barton is very busy writing his Flora Pennsylvanica, Mr. Rafinesque tries to overtake him. Mr. Hamilton is indefatigable in collecting the living American Plants and generously lets me have the Sight of them when I visit him at his Woodlands.*[1873]

What the celebrated Rev. John Bachman, Audubon's friend, meant for Charleston natural history, the little-known Dr. John Brickell (d. 1809),[1874] Barton's correspondent, might have memorialized for Savannah. Brickell became the best informed, though little noticed botanist of his precinct, sharing his knowledge, seeds, and specimens, with visitors and naturalists from the time of his arrival from Ireland in 1780 until his death 22 December 1809.[1875] Barton may have learned of the Savannah physician through Henry Muhlenberg, who

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1872 Barton papers, APS, in the hand of an amanuensis.

1873 HSP.

1874 B. L. Robinson in *Rhodora* 18 (1916): 225-230; Ewan, *Pursh Flora*, 14, and "Transit of botany from Ireland to America," *Glasra* [Dublin] 4 (1980): 7.

1875 Baldwin lamented Brickell's death. He saw his copy of Walter's *Flora Caroliniana*, which had perhaps been acquired by Oemler. Darlington, *Baldwin*, 117.

had approached Brickell for mosses and fungi. On one occasion Muhlenberg inquired of Brickell, "I begged Mr. Enslin to take a good lens to Savannah when he applied to me for a letter of recommendation to you. Has he done it?" Stephen Elliott, John Lyon, and Aloysius Enslen visited Brickell. Elliott botanized with him, later naming *Brickellia* of the aster family, which recalls the fall-blooming vernonias. A remark of Elliott's suggests that Brickell took up plant studies in his later years, and so he may not have known of André Michaux's visit to Savannah in April 1787. Brickell's friendship with John Fraser (1750–1811), the English nurseryman, suggests they may not have shared Michaux's circle of friends.

Brickell's seeds from Savannah were sent by Sir Charles Blagden, M.D., F.R.S.,[1876] to William Aiton at Kew. His encouragement undoubtedly stemmed from Sir Joseph Banks's interest in Kew, for Blagden dispatched no less than twenty-three letters to Banks between 1776 and 1780.[1877]

Brickell wrote three copious letters to Barton during the fall of 1807, two about botanizing "mostly within 100 miles round town," and the third on medicine. He could well have hoped that the competent Latin descriptions of the species he considered new would someday appear to his credit in Barton's "Flora." His first letter in August replied to one from Barton, and it contains a nice account of some of the vegetation of the Savannah area: for example, what he called "*Chamerops* [*Chamaerops*] *hystrix*, or Hackel palm," now known as *Rhapidophyllum hystrix*, which Brickell had described for a "London friend." That friend was surely John Fraser who made at least two collecting trips to the United States, keeping a holding garden in Charleston.[1878] Brickell's needle palm for Barton, living (and dried?) was carried to Philadelphia by Enslen.

Brickell sent some observations to Samuel Latham Mitchill who published them as "Botanical Intelligence from Dr. Brickell, of Savannah, in the State of Georgia."[1879] He had reported on *Brasenia* Screb., *Samolus*, and *Kuhnia*, and had described as new the genus *Stellandria*, but Michaux that same year published the name *Schisandra*, and his name for the shrub was conserved over Brickell's.

Neither Brickell nor Baldwin, who knew the literature, had learned of the early plant records dating from the establishment of the Ebenezer colony near Savannah in 1736. Johann Martin Bolzius's report enumerating eighty-seven plants, mostly of economic interest, was obscurely published in Germany in 1756.[1880] Over two centuries passed before the remarkable color drawings of some of these Ebenezer plants were lifted into print from a Copenhagen archive.[1881]

From Brickell's letters we see how closely he, Fraser, and Enslen were involved in making known the native flora of Georgia and the Carolinas. Through their fieldwork, sharing of information and experience, they were adding to the seedbed for Pursh's *Flora* while providing Barton with exciting novelties. Pursh, employed by Barton at that time, carefully squirreled away his description of the then unpublished palm for appearance in his *Flora*. Brickell wrote to Barton, from Savannah, Georgia, 8 August 1807:

1876 See Charles Blagden (1748–1820) in Dawson, *Banks Letters*, 50–104. C. Blagden, London, 2 March 1801 to J. Brickell. Folder: British Army in America, NYPL.

1877 Blagden has been an overlooked figure of Revolutionary times; of incidental interest in natural history, his few collections in the Banks Herbarium, Natural History Museum (London). For example: *Chamaelirium luteum* (L.) A. Gray.

1878 Ewan, *Pursh Flora*, 16–17; Desmond, *Dictionary*, 237; S. L. Mitchill mentions his "tours" in *Med. Repos.* 6 (1809): 292, but Michaux did not commemorate Fraser. *Frasera* was named by Walter.

1879 *Med. Repos.* 6 (1803): 327–328.

1880 In *Hamburg. Mag.* ser. 1. 17 (1756): 468–518. See our update in *Agric. Hist.* 43 (1969): 121–141.

1881 Kristian Hvidt, *Von Reck's Voyage: drawings and journal of Philip Georg Friedrich von Reck* (Savannah, 1980), 98–108 *et passim*.

I had the honour of receiving your letter of the 8th ult; and have been waiting, in vain, for the arrival of a Philada. vessel to carry my reply with specimens; which shall be sent by the first opportunity. I have, for want of the conveyance by water, judged it adviseable to let you know, by post, that your letter will be attended to with great pleasure.

My botanical expeditions are mostly within a semei circle 8 or 10 miles round town—the number of known and new genera and species in this limit is astonishing: altho' I have found many, I often observe some old or non descript that I had not seen before. We have 4 palms near town: two of them coryphae, described by Mr. Walter—both named cabbage trees—of which one is stemless, but in every other respect like the other, named Palmetto by Mr. Walter (i39) which grows with a trunk like a cabbage stalk 20 to 70 feet high. their fruit is a smooth monosperous drupe on terminal panicles. Stem 1 to 2 feet diameter, thickest at top! I have seen only two species of Chamaerops: their fruit smooth—

1) Chamaerops hystrix acaulis; frondibus glabris, radice spiniferis; spinis longis rectis, erectis, densis linearibus acutis: floribus glabris axillaribus subterraneis. Spadice digitata densiflora, floribus sessilibus: hexandris trigynis; calyx inferus 3 phyllus; corolla ut calyx; spathae 8, ad 10 bursiformes, apice rumpentes. Drupae 3, monospermae. The numerous thorns of this resemble a hackle—the spathae hold the rain which rots the fructification of 99, in a hundred.—as I found in complying with the request of a London friend to examine the genus. Without this examination he had named it corypha hystrix. I had a Sisyphaean task of diging up an incredible number of plants before finding one sound in the fructification—I call it the hackle palm.

2) Chamaerops serrata acaulis. the serratures of the stems ending in sharp strong deflexed thorns. Flowers as the other, but in numerous white racemi on a panicled spadix 2 feet high. Seldom more than one of the germs coming to maturity, the other two emarcidating and remaining minute—tho' I once found three mature fruit in a calyx. The 3 styli are coalesced when young, but finally separate. I suspect this plant does not flower more than once in 12 or 20 years. It flowered most abundantly everywhere round us some years ago—and has appeared exhausted and nearly dead ever since—not a flower to be seen. Perhaps this accounts for these two plants being left among the nondescript palms until the fair opportunity of watching them occured to me by seeing them daily. It is most fortunate that these two species of Chamaerops seldom bear fruit: otherwise their terrible hooks and hackles would make the woods they grow in, impassable to man or beast.

3) Tradescantia rosea. Michaux [now *Callisia rosea*]. *I do not know it. I have seen one in rich low land on Ogeechee river: it was four times the size of our T. virginica* [*sic, virginiana*, Virginia Spiderwort]*—I was impressed on a slight examination that it was the same, or a gigantic variety—it had deep-red flowers. I have not met any species of phalangium here as yet. I have only found the Tillandsia usnaeoides* [*sic, usneoides*]. *I know not its northern limit—it grows in S. Carolina.*

4) Lilium carolinianum [Carolina Lily]. *I saw it in flower about 10 miles from town last week, and collected specimens; but the petals drop*[p]*ed off. their lower haf is linear and very narrow I do not know its northern limits; its corolla is yellowish gilvous with black spots. I will send you some roots.*

I have seen only at Ogeeche one species of Cabomba [fanwort] *different from Aublet's. It grows in ditches; its long strings, or stems,*

flexible like twine, yield and bend to the influent tide; and turn down with the refluent stream, bearing thousands of white natant flowers.

The 2 coryphae and the chamaerops serrata grow in s. Carolina but I have traveled so little there that I cannot say whether they have the chamaerops hystrix, tho' I dare say they have.

Our Cactus Opuntia grows in S. Carolina. I once saw a different kind, very large, on an island 9 miles from town. I was in a great hurry, but I stoped a moment to look at thousands of young Acari of a scarlet colour, runing about on the plant, while numerous large ones of a dark red colour were mostly stationary, with their proboscis immersed in the plant and seemingly sucking. I supposed them Cochineal.

Enquiry among my more southern and northern friends will afford me the pleasure of answering many of your questions, which my short excursions make impossible for me to do now.

Cow poison? The leaves of the prunus Carolinianus have killed cattle that eat of them in the winter, when some limbs were cut off in triming the trees.

Sheep were killed by a melanthium that grows here—if I remember right, it is the Melanthium muscaetoxicon;[1882] *fly poison (of Mr. Walter).*

The Pinckneya pubens grows about here on shallow muddy swamps; it grows 30 or 40 miles north west of us; and on Mobile river as my friends inform me who have seen it; likewise in S. Carolina.

I have found it to be a Cinchona; and have named it Cinchona bractaeata: as some or all the segments of the calyx become large milk-white leaves tip[p]ed with red, and having numerous scar[l]et veins of the colour of highly oxydated blood. The young plants are so exactly in form like the young viburnum nudum, that as they grow together, they are only to be distinguished by the down which covers their stems and leaves in profusion.

I have not seen any kind of Chiococca here—a plant [Milkberry] *was brought to me with care, about 100 miles back in the country—it was herbaceous and hoary, and proved to be at once a new genus of a new order viz. Monadelphia tetrandria.*

No. 109 of Mr. Walter is a Swertia.

I have found a new genus as I think—having some affinity to obolaria—the outer calyx is below, 2 of its leaves opposite and filiform, two opposite, sessile, cordate at base, one semicordate leaf always between the corolla and one of the cordate ones.—The inner calyx is of two leaves below and carinated; corolla nearly tubular, staminiferous, one of its 4 lobes emarginated. Capsule pyramidal, polyspermous—too young to know the valves—seeds ovate. Didynamia angiospermia. The stems assurgent, round hairy herbaceous, a foot high, growing pretty deep in moist ground among our Syena [*Mayaca*, Bogmoss]. *Leaves opposite, amplexicaul, entire, cordate at base, and either rounded upwards, or shaped like a herperbola—petioli solitary, axillary, uniflorous. Corolla blue.*[1883]

Inclosed is a petal, not in good order, of Lilium Catesbeyi [*catesbaei*, Walter, Pine Lily.]

My pen wants mending as well as my letter:—but I fancy your pen is worse. I am Dr. Sir. with the greatest esteem

Your friend John Brickell

1882 [Now *Zygadenus muscitoxicum* Regel, Fly Poison. IPNI. ITIS.]

1883 Possibly *Bacopa caroliniana* (Walter) B. L. Rob., Blue Water Hyssop.

[P.S.] *I once had a sight of Michaux's book and would gladly purchase if it to be had in America–it has however many faults. e.g. I strongly suspect his myriophyllum to be our serpicula–cum multis aliis–I principally wish for it to understand the articles refered to in it, by my correspondants. If it is for sale in Philad. have the kindness to ask the price, and I will send the money for it.*

Received August 22nd 1807[1884]

Brickell's letter of 7 September from Savannah continues botanical notes in answer to queries from Barton:

Dear Sir.

I send in a box directed to you a specimen of Chamaerops hystrix[1885] *and Chamaerops serrata, according to your request–and likewise a Corypha pumila with its fruit. The only difference that I have observed between this and the Corypha palmetto*[1886] *of Mr. Walter is that this is stemless, and the latter has a trunk sometimes more than a foot in diameter, and from 20 to 70 feet high–*

I have seen probably what is called the Tradescantia rosea by Michaux, at Ogeechee river, about 15 miles from here–but have not ventured so far in our intense heat, since I had the honour of your letter of 8 July, to which I hope you have before now received my reply.

I shall, as occasions present, pay attention to the objects of your enquiry, that I may have the pleasure of gratifying you as amply as possible. I have sent you a Lilium Catesbeyi, supposing it to be the Lilium Carolineanum [*sic, catesbaei* and *carolinianum*, respectively]*–and in another box I have put up a root in moist sphagnum which I hope you will receive alive, with several roots of the Trillium cernuum*[1887]*–Stellandria glabra,*[1888] *and some living plants which I named many years ago Jeffersonia sempervirens.*[1889] *Wildenow names it Bignonia sempervirens. It is a voluble shrub; the calyx below. 5 leaved or partite deeply–the funnel shaped petal bears five stamina; the stylus is dichotomous at top, bearing four stigmata.*

I have put into the box an humble kind of Chinkepin, fagus castanea nana, remarkable for its large leaves and fruit; it is seldom seen to exceed 1 or 2 feet high–while our common Chinkepin (fagus castanea pumila[1890]*) grows here to a tree of fifty feet high, and near two feet in diameter.*

I have put some of the nuts into the moist sphagnum to bud, in case the plants fail–but fear they are not suficiently ripe for the purpose. You will find a few dry plants. I was puting up for another friend a few living plants, and thought I might at the same time send half of them to you–uncertain however whether this Trillium grows with you.

I send the two boxes in care of Capt. Baker in the brig Elisa bound to Philadelphia.

1884 Barton papers, APS.

1885 [*Rhapidophylum hystrix* (Pursh) H. Wendl & Drude ex Drude, Needle Palm. IPNI. ITIS.]

1886 [*Sabal palmetto* (Walter) Lodd. ex Schult., Palmetto. IPNI. ITIS.]

1887 [Whip-Poor-Will Flower, *Trillium cernuum* may refer to Barton's name in *Fl. N. Am. ii*, 13, t. 40, 1803, but Linnaeus established the name earlier in his *Sp. Pl.* 339, 1753. Barton's name is synonymized to Red Trillium *Trillium erectum* L., *Sp. Pl.* 340. IPNI. ITIS. TROPICOS.]

1888 [*Schisandra glabra* (Brickell) Rehd., Bay Starvine. IPNI. ITIS.]

1889 [Now *Gelsemium sempervirens* (L.) St.-Hil., Carolina Jessamine. IPNI. ITIS.]

1890 [The Alleghany Chinkapin is *Castanea pumila* (L.) Mill. IPNI.]

I own ticket 22287 in the Bustleton and Smithfield road lottery—signed Henry Pratt—and will thank you to examine its fate. I am Dr. Sir. with the greatest respect your friend

John Brickell.

Is the inclosed kind of arctium [Burdock] *new to you?*[1891]

Brickell's last letter to Barton, 25 November 1807, read:

My highly valuable Friend I sent to you one box of living plants, and one box of dry ones, including specimens of our palms, with a letter in care of a captn. Baker (I think) bound to Philadelphia, about the 9th of last September—It would give me pleasure to hear of their having arrived safe; and to receive any other commands from you, in the botanical, or any other way, in my power to execute. If nothing material occurs, at this time, for communication, you may let Mr. Enslen know the result of the above—and likewise the fate of my ticket No. 22287 in the Bustleton and Smithfield turnpike-road, lottery, which I suppose is drawn.[1892]

The rest of the letter concerned medical events, and we know no more of the lottery ticket.

Stephen Elliott (1771–1830) of Beaufort, South Carolina, confided to Muhlenberg on 25 February 1810 that Brickell "had naturally a very strong mind, and if he had applied with active industry to any Science would have been distinguished in it."[1893] Brickell died in 1809, and Enslen of consumption the following year.

Barton left a record of Elliott's visit in a note of 3 September 1808 on "Mus Tuza," the pocket gopher.[1894] John S. Cogdell (1778–1847) sculptor (of a bust of Elliott), recorded in his diary 7 September that he had dinner with Drs. Barton and Wistar, Mr. Collins, John Vaughan, Dr. Dewees, and Mr. Vaughan of Jamaica, Mr. Peal, and Mr. Elliott of Beaufort.

Dr. Barton appeared from his conversation (which was unceasing) to have devoted his attention to Botany—and he was all the time describing or asking for descriptions of plants, grass and Birds—at length when the desert came on the Table—Mr. Vaughan proposed that Dr. B shd tell the kind of Berry or plumb of which the Tarts were made—he not being able to do so, it caused some humorous remarks from Mr. Vaughan of Jamaica. The subject was then changed for Physick—and when they got into the inqueiring regarding the Yellow Fever I left the House.[1895]

William Dunbar (1749–1810)[1896] born in Morayshire, Scotland, naturalist, amateur meteorologist and astronomer, after some years of struggle developed his plantation, "The Forest," near Natchez. After he sent "Meteorological observations for 1799 at the Natchez" to Jefferson, he was welcomed into the American Philosophical Society in 1800,[1897] and became a valued correspondent of Jefferson. Dunbar had a family, neighbors, and friends, and a number of slaves in a near wilderness to minister to. In his letter to Dr. Garrett Pendergrast,

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1891 Barton papers, APS.

1892 Barton papers, APS.

1893 Muhlenberg letters, HSP.

1894 [*Mus tuza* Barton 1806, is a senior synonym of uncertain application to *Geomys pinetis* Raf., the Southeastern Pocket Gopher. The Tuza of Mexico, seen by Barton is more likely *Zygogeomys trichopus* Merriam, another pocket gopher. MSW.]

1895 Winterthur Museum, Joseph Downs Manuscript Collection, No. 64 x 8.1, pp. 23–24. Groce & Wallace, *Artists*, 136; Edwin G. Nash in *DAB*. Thanks to George Rogers for this late addition.

1896 Franklin L. Riley in *DAB*.

1897 APS, "Minutes," 294.

who was completing his degree with Barton and would dedicate his thesis to him, he advised the young doctor to bring back "seeds of the plant which is said to cure Canine Madness," also Digitalis, and "Scabs of the vaccine." He also relates information about a relative of wild lettuce, "Gall-of-the-Earth," *Prenanthes serpentaria*, which may stand more than a meter tall from a spindle-shaped tuber. William Baldwin notes that all species of the genus, which he knew had bitter properties, were believed by hillfolk to be an antidote to rattlesnake bite.

In April 1802 Gov. William C. C. Claiborne had written to Dunbar unsure about the "important discovery" and the efficacy of the "vaccine matter" that he hoped would stop the spreading of small pox "from its base in New Orleans."[1898] When Dunbar wrote his young medical friend to bring the "scabs of vaccine" from Philadelphia, it is evident he was at least willing to try the new inoculation, perhaps even convinced of its values. Dunbar's letter to Pendergrast near the eve of his degree reads:

> *Natchez 31 March 1803*
>
> *Dear Sir,*
>
> *I received your favor of the 14th January: the plant you enquire after goes by the name of Gall of the Earth in this Country, (probably) because of its bitter taste; it yields upon being wounded a considerable quantity of a milky juice, hot, bitter & pungent to the tast; it is an annual herbacious plant, that is, the trunk is annual but the root perennial: when small, it resembles at first view some kind of Endive, the leaves being what Botanists call 'dentato-sinuate'; when in flower it rises, in a good soil to 4 feet in height, It is I think (from a recollection of last year) of the order Polygamia Aequalis of the Class Syngenesia, but I am not so much of a practical Botanist as to be able to name the genus, or to say whether it may* [be] *a non-descript, which I do not Suspect; it perhaps may be Scorzonera,*[1899] *Viper-grass, as its reputed virtues might seem to indicate. We have had so much continued cold weather this winter, that this plant & many others which used to appear in January are only now peeping out of the ground. As you propose leaving Philadelphia in April; it will be impossible to send you any portion of this root, so as to arrive there before your departure—You are aware that the root must be thoroughly Cured before it is packed up to be sent to any distance, otherwise its virtues would be lost in the putrefaction of the root; but I will prepare some of the root as soon we can procure a sufficiency of it, and will send it to Mr. Ellicot or to Dor. Barton—do not omit to bring with you the seed of the plant which is said to cure Canine madness, also the Digitalis or any other, curious or useful in medicine. You will no doubt bring some Scabs of the Vaccine, which is now known to be a mass of the Concrete Virus, & is the surest mode to preserve and transport the infection.*
>
> *Some of your friends have no doubt written you of the unfortunate issue of a trifling dispute which happened at a ball between your Partner Dor. Weis & Franck Surget, by which the former was killed in a duel on the Spanish side.—With Esteem Dear Sir Your very obedient Servant*
>
> *William Dunbar*
>
> *Doctor Garrett Elliott Pendergrast*
>
> *Philadelphia*[1900]

1898 Duffy, *Louisiana* 1: 217.

1899 [*Scorzonera lacinata* L. in Asteraceae. IPNI.]

1900 Barton papers, APS.

Dunbar sent in reports that Barton published in his *Philadelphia Medical and Physical Journal*, e.g. to John Vaughan 15 February 1805, a "draft cabbage...found in the woods of Washita," the *Sabal palmetto* Lodd. ex Schultes.[1901]

Not until 1806 was a hospital established at Natchez particularly with the raftsmen down the Mississippi in mind. They often were struck with fevers of the hot humid South, and had found little help in New Orleans. A call for assistance for support of the hospital was sent by an anonymous writer to Coxe's *Philadelphia Medical Museum*.[1902] Could it have come from this surveyor-general for the Natchez area?

Barton was also inexorably involved with the Washita Expedition under the direction of Dunbar 16 October 1804 to 31 January 1805, which brought letters from Jefferson on plant and animal identifications. Jefferson's letters of 2 and 21 May 1805 were introduced by his admission, "I know I cannot dispose of them better than by transmitting them to you, with a request of the result of your investigation," adding that he would incorporate Barton's findings in a digest of the expedition's progress.[1903] The second letter carried an addendum: "Some moss" taken out of the Hot-springs of the Washeta–he had no microscope so is sending them "to the better hands of Doctr Barton." Was this an alga or a *Chara*? Barton's reply of 12 June was characteristic of the busy naturalist pressed for identifications, "Of the plants which you have forwarded me," most were plants common in the area, but there was an undescribed Gentianaceae, an annual of saline swales, the genus *Eustoma*, which was not to be named until 1806 when Salisbury described it,[1904] probably from a specimen sent by Barton. Pursh, employed by Barton at this time, seems not to have seen the specimen for he would surely have detected this novelty and included it in his *Flora*.

Jefferson acknowledged Barton's letter 21 November 1805 from Washington. Dunbar also cooperated with Jefferson in the Freeman-Custis Expedition on the Red River in 1806.[1905]

Rafinesque, *A Life of Travel*

Eager to glean information and to publish on the riches of American natural history was Constantine Rafinesque-Schmaltz (1783–1840),[1906] "Franco-German by blood, Turko-Grecian by nativity." He was born in Constantinople, but spent his boyhood in Marseilles and Leghorn, learned English from a tutor, Italian from associates, and several other languages by study himself. He started his first plant collection when eleven years of age and considered becoming a botanist or horticulturist, but his family favored a business career. This he was persuaded to enter, because it offered greater financial return and wide opportunities for travel. In fact he came to the United States in 1802 when eighteen years old trusted with a business venture that fortunately allowed him considerable free time. The fear of yellow fever decided him to settle in Germantown, where he met and lived with Colonel Forrest, a horticulturist with whom he made many trips into the neighborhood, to the pine barrens of New Jersey, and along the seashore. He wrote to Muhlenberg 9 May 1803 that in two or three days he planned to set off for Mt. Holly, New Jersey, and wrote again on the 23rd about his New Jersey plants. Rafinesque was the "Mr. R. of Delaware," the gentleman reported by Matthias Barton as having seen and identified the Canvasback duck. Matthias also reported the sighting to Barton.[1907]

Now having moved to Philadelphia, Rafinesque wrote to Muhlenberg 4 June 1803:

1901 *PMPJ* 2 (1805) Pt. I: 172.
1902 *Philadelphia Med. Mus.* 2 (1806): 76–77.
1903 For details see Meisel, *Bibliography*, 2: 86–88.
1904 *The Paradisus Londonensis* (London, 1805–[1808], 2 vols.), pl. 34.
1905 Flores, *Custis*.
1906 Adler, *Contributions*, 25–26; *TL-2*; Boewe, "Base Wretch"; J. Ewan in *DSB*; George H. Genmer in *DAB*.
1907 *PMPJ* 2 (1805) Pt. 1: 161.

> *Dr. Barton to whom I am well acquainted is pretty communicable in word and conversation but very little otherwise & he is always so busy that I never could get him to show me his whole herbarium or go along to botanize–I have little hope to get any description or important observation from him.*[1908]

Then again he reported to Muhlenberg 30 June 1803:

> *I hear from Dr. Barton that Michaux father is dead coming back from the Isle of France into France whether true or not I dont warrant. You no doubt have heard of his Flora Americana boreali having been printed in Paris. I wonder it has not yet reached this country, at any rate I hope to get it next fall, this will be a valuable book but on many accounts an imperfect one as it will not contain I dare say the two third of North American plants.*[1909]

Barton soon acquired Michaux's *Flora*, now among Barton's books at Pennsylvania Hospital, Philadelphia.

On 10 July Rafinesque wrote Muhlenberg that he had seen Mr. Hamilton of the "Woodlands," and that Pursh would become his gardener the following September.[1910] He would be succeeding John Lyon. He visited Marshall's garden and of course the Bartrams. In Philadelphia he met a number of members of the American Philosophical Society, including Rush, Alexander Wilson, and inevitably the leading botanist. On 12 March 1804 Barton had a visit from "Rafinesk" to whom he showed the six volumes of Brisson, *Ornithologie, ou Méthode...* (Paris, 1760, 6 vols.), especially the plate of *Anas ferina* (Figure 74). This the bird a "Mr. R." had reported from near Lancaster, the Canvasback duck.

Barton at first received the young naturalist warmly, yet intentionally gave him no important observations. Another meeting took place in the professor's library, where Barton proudly exhibited his newly acquired copy of Abbot's *Insects*. Just before Rafinesque left for Italy he reported that having been told by someone that he "might be admitted as Botanist" for the Lewis and Clark Expedition, he did not apply when Wilson was rejected as ornithologist since "this journey did not promise any reward, while I had the offer of a lucrative situation in Sicily, a country new to me." He did present a proposal to Jefferson 27 November 1804 to which Jefferson acceded 15 December that he accompany Dunbar up the Red River, "Expenses only with little other compensation." Rafinesque, however, had just sailed for Italy and the lucrative position. He would be out of the country for ten years. Rafinesque left a manuscript of his "Catalogue of plants of Delaware and the District of Columbia" for Barton to publish in his new *Journal*. Although Barton announced its publication in a forthcoming issue,[1911] he did not publish the work. Rafinesque had a greater than normal share of self-confidence, and had displayed little store in the accepted names of plants–in fact he had created many new species among those already known. Whether Barton disapproved of the treatment within the manuscript or resented that it covered an area of his particular studies, he did not publish it. Rafinesque had promised to send a copy of his "Catalogue" to Cutler when writing of specimen exchanges.

There may have surfaced another reason why Barton withheld publication of the manuscript. He probably resented an even further encroachment by this European into his field of botany. An undated letter from Rafinesque in Palermo, Italy, includes the statement:

1908 Muhlenberg correspondence, HSP.

1909 T. J. Fitzpatrick collection, University of Kansas, Lawrence.

1910 Muhlenberg correspondence, HSP.

1911 *PMPJ* 2 (1806) Pt. 2: 177. A. O. Tucker and N. H. Dill consider "Rafinesque's Florula Delawarica" and attempt a reconstruction in *Bartonia* 55 (1989): 4–14.

"I am in treaty with a printer in Paris to publish in a year or 2 a sup[plement] to Michaux [*Flora*]. It will be sent to you when it comes out." Lacking some of the first part, the letter reads:

> *...chose to undertake such a Correspondance. I have also thought of yr mineralogical requests, but it unfortunately happens that in this moment the Jesuits having been restored in this kingdom and coming again in possession of their property & part of the Museum they Posses of Natural history. Padre Cancelli. cannot dispose of the Dupls. he is in possession of, but it is likely that next year when everything will be settled, he will be able to forward you something I think meanwhile you would do well to send me something in minerals & Seeds. for them, for I can assure you they are truly disposed to correspond with you. Mr. Chiarelli the demonstrator of Natl. History has even promised me to try to take of from his own Collection what he can Spare & if he gets ready before the Departure of the* [ship] *Ceres you will receive something along with this Letter.*
>
> *I have received the news that my friend Dr. Biagio Bartalini prof of Botany in Siena (Tuscany) director of the Bot. garden & Secretary of the Academy of Sciences of that City, an able mineralogist has wrote you, according to the prayer I made him, you will do well to write him also & begin an exchange of minerals.*
>
> *There is an absent Gentleman, Caval. Gineni who posess a fine Collection of minerals, here, when he will return I shall endeavour to prevail upon him to send you some of them.*
>
> *I have wrote you already of my having lost some Specimens in my Voyage to Europe besides Being missing a few ones that I did not find in my tour & I sent you Something like a list of them I believe, I will be extremely thankful you will spare me those you can & send them along with the minerals, any new & curious plant, the new ones of Michaux you may add along I will do whatever you may Wish in return, a friend of mine who is going thro Sicily next fall Will collect minerals for me that I'll send you. Next Year I shall travel also & forward you what I Will think acceptable among my Collection, this Country is still rich in new plants & I am hoping a good Mess of them, there never was a Flora Sicula made I shall try to come up to one or an*[other] *ans*[wer] *on it. If I could think Specimens of rare plants would be an acceptable addition to yr herbarium, You may depend I will send you what you ask in return for those I expect from you.*
>
> *I am in treaty with a printer in Paris to publish in a year or 2 a Supl. of mine to Michaux. It will be sent to you when it Comes out—I expect in return yr Works on Natural history especially the quadrupeds, Reptils of pennsylvania & any of yr Work will be acceptable, if you chose to send some others to the publick Libraries here you may forward them to me & I will present them in yr name. I am with sincere Regard Yr most humble Svt. C. S. Rafinesque."*

[He added mailing instructions:] *Mr. C. S. Rafinesque; care Mr. A. Gibbs Am. Agt. Palermo.; & under Cover of Mssr. Dav. Causte & Co., Leghorn; Mssrs Dilier & Co., Marseilles; Mssr. Falevert & co., Naples (New York & Boston, &c.) Please give me the address of some friends of you*[rs] *in Baltimore.* [The cover was addressed to] *Dr. Benjn. S. Barton,*

Philadelphia, Ship Ceres, Brown. [It was marked by BSB] *"Received October 12 1805."* [Rafinesque had paid "Sh 42" in postage.][1912]

Rafinesque's letter had been as full of promises of deliveries as Barton's often were. Rafinesque had, however, contacted Professor Bartalini by letter 28 March 1805:

> *I am sorry to see that you don't wish to have any of the dried plants from America, preferring instead some Natural products which I do not possess, Botany and Ornithology having been the principal subjects of my research in America. But I am gratified to be able to suggest to you a way of obtaining them, my friend Doctor Benjamin S. Barton Professor of Materia Medica Botany and Natural History at the University of Pennsylvania wishes to start an exchange of just such products and if You would like to write him a letter (better it be written in French) which I will convey to him proposing the same and promising to send him your products from Tuscany in exchange for his American ones which he will send you, you can be assured to receive soon a fine assortment.*

Rafinesque wrote again to Bartalini from Palermo, 29 July 1805:

> *I am gratified to see that you have written to Doctor Barton in Philadelphia, this correspondence will please him very much—You must not forget to give him the address of some friends in Livorno to receive his Letters and Parcels—as well as writing him in French or Latin, because he doesn't understand Italian.*[1913]

No letter from Bartalini seems to have arrived. Sometime later an aggrieved Rafinesque wrote again to Barton:

> *Sir, I have repeatedly wrote you & never received an answer as yet, nor have I received the printed Duplicates of my Index florae Delavarica & Columbica which I communicated to you before my departure from America to be inserted in your Journal, but hope and trust to receive them soon.*
>
> *I beg the favor of your electing me Correspondg member of the Linnean Society of Philadelphia to which I am Willing to communicate many of my opusculae on American Botany & return you the favor in whatever manner most agreeable*
>
> *Pray would you not enter on a Musutal exchange of plants & objects of Natural history—?*
>
> *Is not yr. flora Pensylvanica published nor any other of your Works & how am I to procure them?—*
>
> *I remain Sincerely yr most obedt. st. S. Rafinesque Schmaltz. Chancellor of the American Consulate Care Al. Gibb Consul. Palermo. Send yr answer via New York Boston &/or Salem.*[1914]

There is no record of Barton's response, if any, and Rafinesque's name does not appear in rosters of the American Linnaean Society. As editor of *Pamphysis Sicula...* (Palermo,

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1912 Barton papers, APS.

1913 Holographs at Academia dei Fisiocritici, Sienna. Letters and translation courtesy of Dr. Charles Boewe.

1914 BPL.

1807),[1915] Rafinesque cites his membership in the Society as "*Linneanae Philadelphiae Academiae Socio.*"[1916] Barton may not have received all of the letters Rafinesque wrote him—trouble on the high seas may have interfered, but he well may not have answered those he did receive.

Rafinesque found S. L. Mitchill more receptive of his articles. Just before leaving the United States he sent a letter to Mitchill "dated Sept. 7, 1804," on the "Canvass-back duck and its food," which Mitchill published,[1917] and from Palermo, Sicily, August 1805, "Additions of Michaux's Flora of North America."[1918] Mitchill included a "Prospectus of Mr. Rafi. Schmaltz's two intended Works on North-American Botany; the first on the new Genera and Species of Plants discovered by himself, and the second on the Natural History of the Funguses, or Mushroom-Tribe of North America."[1919] This was also translated and published in Paris in 1809. From Palermo 1 September 1807 he communicated "Essential Generic and Specific Characters of some new Genessus and Species of Plants observed in the United States of America, in 1803 and 1804,"[1920] and "Notice on the Medical Properties of some North American Plants,"[1921] which was also translated and published in Paris in 1809. Under "Progress in American Botany" Mitchill published information received from Palermo, 30 May 1809.[1922]

Pursh had exchanged plant specimens with Rafinesque, and Rafinesque accused him of pilfering the Threadleaf Sundew *Drosera filiformis*, which he had collected in 1802. Muhlenberg confided to Elliott, 10 June 1809, "I know [Rafinesque] personally and find a great number of my plants which I gave him superficially described without mentioning a word whence he received them."[1923]

Persoon, writing in German to Muhlenberg from Paris, 24 October 1809, through the care of David Bailie Warden, the American Consul, gave his thoughts on Rafinesque:

> *At this same Mr. Warden I read an intersting article in the Medical Repository, by Rafinesque-Schmaltz, concerning several rare and new American Plants. The author shows talent, industry and knowledge, but perhaps also a tendency towards innovations and a multiplication of genera. You, dear Sir, will be best able to judge this; please let me know your opinion about his new genera and species. Is the author's opinion correct that the genus Bartonia is the Centaurella Michx.,*[1924] *and that Persoonia is Marshallia Schreb., as well as that Brasenia Schreb. is Hydropeltis Michx.*[1925] *Mr. Schmaltz also seems to have studied the American fungi, and assigned many new genera. For the new edition of my Syn*[opsis] *fungor*[um]. *I would like to get these genera, through your kindness, as far as they are known to you, as well as the other plant families of this author.*

1915 See *TL-2*, 8550.

1916 On the title page of *Pamphysis*, Rafinesque claims the membership. Boewe, letter 29 Aug. 1990: only two copies of *Pamphysis* are known, one in Florence, the other in de Candolle's library in Geneva.

1917 *Medical Repos.* Hex 2. 2 (1804): 208.

1918 *Medical Repos.* 3 (1806): 422–423.

1919 *Medical Repos.* 5 (1808): 350–356.

1920 *Medical Repos.* 5 (1808): 356–363.

1921 *Medical Repos.* 5 (1808): 423–424.

1922 *Medical Repos.* Hex 3. 1 (1809/1810): 197 [297].

1923 Muhlenberg correspondence, HSP.

1924 [*Centaurella* Michx., *Fl. Bor. Am.* i, 97, t.12, 1803, also in the Gentianaceae. *C. paniculata* Michx., p. 98, 1803 synonymizes to *Bartonia tenella* Muhl. ex Willd. Persoon was quite accurate. IPNI. TROPICOS.]

1925 *Persoonia* J. E. Smith, *Trans. Linn. Soc. London* 4 (1798): 215, the specimen sent to Smith either by Barton or Muhlenberg. [*Hydropeltis purpurea* Michx. refers to *Brasenia schreberi* J. F. Gmelin. IPNI. TROPICOS.]

> *I have heard that Mr. Schmaltz is presently at Palermo in Sicily, belongs to the Jewish religion, and is by birth a Swiss; he probably was a physician when he lived in the United States.*[1926]

Growing tired of Sicily and its people, an unhappy marriage (he named his son Charles Linnaeus), and discouraged at his having been refused the chair of botany at the University of Palermo, Rafinesque sailed again for New York. After one hundred stormy days he arrived in November of 1815, having suffered the loss of everything: his fortune, his trade goods, share of the cargo, natural history collections, the labors of twenty years past, his books, manuscripts, drawings, and clothes. He had made a collection of twenty-nine plates and forty-six figures of North American plants he had "discovered" 1802–1804, and which were published in 1807, 1808, and 1814.

Mitchill, with whom he made many trips along the Hudson, came to his rescue. He introduced him to Edward Livingston, who engaged him for the winter as tutor for his three daughters, and he lived in their family home, "Clermont" on the Hudson. Having learned that a successor was being sought for Barton, Rafinesque applied in a letter dated "Clermont, 1st January 1816," which was apparently transmitted to the care of Dr. James Mease and re-dated Philadelphia, January 25, 1816: "C. S. Rafinesque had the honour to offer his services to the Trustees of the University of Pennsylvania, to fill the chairs of Natural History and Botany, or either of them, vacant by the death of the late eminent Dr. Barton." He then listed his published and unpublished works. The appointment, however, went to that native American, William P. C. Barton, to teach botany in the Medical School, and to Charles Caldwell to teach natural history and geology in the Arts Department of the University.

When Mrs. Livington became ill and the family moved for the time to Charleston, South Carolina, Rafinesque returned to Philadelphia, where he was now befriended by Zaccheus Collins.

With new hope of making a name for himself in the discovery of new natural objects, he set out in 1818 for a two-thousand mile tour of the Alleghenies, mostly on foot, as far as Kentucky and Illinois. From 1819 until 1826 he was a professor at the University of Transylvania, then returned to Philadelphia, where he organized a savings bank designed to finance a series of planned publications. His overzealous schemes and the harsh criticism of his colleagues lost him the friendship of, for example, Silliman and Ord. Although he made several donations to the American Philosophical Society, he was not elected a member. His 50,000 botanical specimens had been badly damaged by vermin. Elias Durand, curator of the herbarium at the Academy of Natural Sciences in Philadelphia, purchased Rafinesque's herbarium in 1841, discarded many specimens, and rewrote plant labels, omitting significant data.[1927] George S. Myers in discussing Rafinesque's contribution to ichthyology described him as "an erratic genius with much peasant cunning but little system to his enormous memory and active voracious mind."[1928] Because of his many newly described and published names in so many fields of natural history, his works have been and continue to be studied. Rafinesque wrote of himself in 1817:

> *I have often been discouraged, but never dispaired long. I have lived to serve mankind, but have often met with ungrateful returns. I have tried to enlarge the limits of knowledge, but have often met with jealous rivals instead of friends. With a greater fortune I might have imitated Humboldt or Linnaeus.*

1926 BPL. No, not a physician, but a business representative.

1927 Material taken from Rafinesque, *Life of Travels*; Boewe, "Sketch of his Life" in *Rafinesque*; Overlease and Rofini in *Bartonia* 53 (1987): 24–33.

1928 *Copeia* (March 1964): 40.

In his *Medical Flora* Rafinesque remembered two distinguished Americans in the name "*Jeffersonia bartoni,*[1929] common twinleaf," the plant "distinguished by Dr. B. Barton" from "Popdophyllum by Linnaeus who called it P. diphyllum."[1930]

André Michaux

Philadelphia, the capital of the United States from 1792 until 1802 when it moved to Washington, became the focal point for the country's intellectuals, visiting foreigners, and the opportunities to meet them. One won a grant from the American Philosophical Society to explore the West. He was not elected a member of the Society.

André Michaux (1746–1802),[1931] supported by his government, France, came to the United States in October 1785, accompanied by son François, to search for timber, crop, and medicinal plants. He established two growing gardens, one about eight miles from New York City, and the other in 1787 near Charleston, South Carolina. His American travels, beginning in 1789, took him from the southern shores of Hudson's Bay into northern Florida, the Carolinas, Kentucky, Tennessee, and southern Illinois. The Catawba Rosebay, *Rhododendron catawbiense* Michaux was his most spectacular find, inspiring other plant hunters to search it out for foreign gardens.

Activities of the American Philosophical Society were a major concern for Barton in 1793. Late in 1792 André Michaux had returned from his explorations in the Hudson's Bay area, and he approached the Society with the suggestion that he explore the Far West. He visited Bartrams' garden on the Schuylkill to hear from William tales of his finding treasures on his southern travels,[1932] and determined to follow his example with an exploration of the West. Barton was appointed by the Society's vice-president, Jefferson, to interview Michaux for the proposed trip, which the Society was to help finance.[1933] Barton reported to Jefferson 4 January 1793:

> *Sir,*
>
> *In consequence of your note, I have visited a Mr. Michaux. He assures me, that he will relinquish all thoughts of his journey to South Carolina, and that he will engage in this scheme, as soon as you think proper. He seems much pleased with the prospect of having so valuable a guide to Kaskaskia* [Illinois], *as the one you have pointed out, and will be happy to have an opportunity of conversing with the Indian, whenever you shall appoint a time, for the purpose.*
>
> *I have ventured, this morning, to be very explicit with my friend on the pecuniary head. He seems content to undertake the arduous task (for such it, undoubtedly, is) with a very moderate assistance in the off-set. This assistance he does not even ask for until his arrival as Kaskaskia, where, he thinks, it would be p*[roper?] *that he should have the 'power' of drawing for the sum of one Hundred guineas. Upon his return, he supposes (provided he shall make discoveries of any interesting importance) he shall be entitled to something handsome. In consequence of some conversation which I had with my uncle (Mr. D. Rittenhouse), last evening, I ventured to tell Mr. Michaux that I did not doubt his expectation would be gratified.*

1929 [*sic, Jeffersonia bartonis* Bartram, 1803, referred today to *Jeffersonia diphylla* (L.) Pers., 1805. IPNI.]

1930 *Medical Flora* 2 (Philadelphia, 1830, 2 vols.): 11, copy seen in NLM.

1931 Savage & Savage, *Michauxs*. Ewan in *DSB*, and "Explorateurs français," 22–23, 37; H. B. Baker in *DAB*.

1932 Harper, *Bartram's Travels*, xxix.

1933 APS, "Minutes," 215. Recently discovered details of the subscription plan are given in Savage & Savage, *Michauxs*, 127–128.

I shall be happy to have an opportunity of conversing with the Indian on the subject of the journey. Meanwhile, I remain, with great respect, Your Sir and very humble Servant, &c.
Jan: 4th 1793
B. S. Barton[1934]

Before Michaux took off, Edmond Charles Genêt (1763-1834),[1935] the first Minister of France to the Republic of the United States, landed at Charleston 8 April 1793. His ambitious plans for French expansion involved sending Michaux as French consul to Kentucky, then down the river to New Orleans to stir up rebellion against Spain. Jefferson objected, and President Washington intervened, and Genêt was removed from his post. Since Genêt's return to France would have meant the guillotine, his party having fallen from power, Genêt was permitted to remain in the country. While in Philadelphia he enjoyed the company of Jefferson and other liberals. Barton visited him on invitation between five and six on the evening of 28 June 1793. In 1794 he retired to a farm on Long Island, married Governor Clinton's daughter, and busied himself with scientific agricultural experiments, botany, agriculture, mineralogy—scientific expeditions, his interest.

On 15 July 1793 with a grant from the American Philosophical Society, Michaux left Philadelphia for Ohio, travelling through Lexington, Kentucky, to Vincennes on the Wabash River, and at the end of August reached Kaskaskia near the Mississippi, and returned 12 December. On the 14th he reported to the Society's president, Rittenhouse, and its vice-president, Jefferson. On 4 January 1794 he visited Barton for a spirited conversation on books and plants. Barton loaned him his copy of the ninth edition of Linnaeus's *Systema Naturae* (Leiden, 1756) from which on Sunday the fifth, and continuing on the seventh and eighth, Michaux copied notes on mammals, birds, etc.[1936] In 1795 Michaux made another trip into North Carolina, the "Cherokee country," and on his return in 1796 met his countryman Palisot de Beauvois and Barton.

Now, with a wealth of specimens and observations, he found himself financially depressed, and so he returned to Europe. In November he wrote Collin from Amsterdam, but off Holland on his way to France he was shipwrecked, his herbarium damaged, and some manuscript lost. Unable to interest the French government in support for further American exploration, he sailed with Baudin[1937] as naturalist, intending to explore in Australia, but stopped in Madagascar with intent to study its natural history. He took a fever, however, and died in November of 1802. In 1803 under the editorship of Claude Richard his *Flora Boreali-Americana* was published in Paris, *Histoire des Chênes de l'Amérique* (Paris, 1801) having appeared earlier probably also with Richard's assistance. A few specimens from Michaux are in Barton's "Herbarium Americaum" at the Philadelphia Academy of Natural Sciences, for example, "Glaux. Saltwort. Glaux maritima, Sea Milkwort. Black Saltwort. Collected, by Mr. Andrew Michaux, in the Salt water of the River St. Lawrence, in 1792," and "Swertia Felwort...on the banks of the Seganey River in Canada, in the year 1792."[1938]

1934 MRS.
1935 Maude H. Woodfin in *DAB*; Savage & Savage, *Michauxs*, 132-135.
1936 Barton papers, APS.
1937 Nicholas Baudin (1753-1803), French navigator.
1938 Herbarium Americanum 1: 5. ANSP.

Chapter XVII

Barton's Protégés

"Trammelled as you are in a profession, I am astonished that you have found time to do so much, and so well."
—Joseph Priestley

Frederick Pursh

When Frederick Traugott Pursh (1774–1820) landed in Baltimore in 1799 he brought horticultural training given him by the Royal Gardener of Saxony and experience from the Dresden Botanic Garden. He was, after André Michaux, whom he followed, the most qualified botanist among foreigners to arrive in the United States. As he writes in the preface to his *Flora*, vi, "My first object after my arrival in America was to form an acquaintance with all those interested in the study of botany. Among these I had the pleasure to account one of the earliest and ever the most valuable, the Rev. Dr. Muhlenberg of Lancaster, in Pennsylvania." He merely mentions his first position as gardener in Baltimore, but recompense for gardeners in the young Republic was meager, and there was not the status accorded horticulturists in Europe. His being German, and his English then barely understandable, made his appreciation of Muhlenberg's hospitality and help the greater. It was probably through Muhlenberg that he soon made visits to Humphry Marshall's and Bartrams' gardens, where he delighted in the collection of native plants, and to Hamilton's "Woodlands," rich both in natives and in exotics under glass. Pursh served as gardener to Hamilton from 1802 to 1805.

William Hamilton, then fifty-five, was a proud Anglophile, grandson of Andrew Hamilton, lawyer, designer of the State House, speaker of the Assembly. William had waited out the Revolution in England, returning in 1786 with seeds and plants for his suburban estate, the "Woodlands" (Figure 16), now a cemetery within Philadelphia.

John McArran, Scotsman, may have been Hamilton's first "proper" gardener, unless it was George Hilton, Englishman, who was dispatched to the Pennsylvania western mountains to collect *Pyrularia* (Buffalo nut) "or anything curious." John Lyon served also at the "Woodlands" before Pursh's advent, and collected for the garden before seeking nursery stock on his own for London sales.[1939]

Pursh's three years at the "Woodlands" were rewarding, if not financially, then for the knowledge he gained, especially of native plants, for literature on natural history, and for the human contacts: William Bartram, John LeConte, Lyon, and, most importantly, Benjamin Smith Barton, who took his materia medica and botany classes there to observe living plants.

It was while Pursh was at the "Woodlands" that Lewis and Clark set out for the Pacific in 1803, returning in 1805, the plant collections delivered to Jefferson on November 16. The seeds from this first transcontinental natural history survey were divided between Hamilton and nurseryman Bernard M'Mahon. For the site of his seed store see Figure 42. Pursh probably had the first view of the seedlings of novelties he was to describe in his *Flora*.

[1939] Ewan, "Lyon," 7–8.

The "Woodlands" was, for its variety and tasteful display, Jefferson said, "the only rival I have known in America to what may be seen in England."[1940] Hamilton, proud of his collection, was the classic amateur who delighted to show his prizes to visitors, but hesitated long before sharing. He sought additions to his collections—how we wish a catalog had survived!—from friendly gardeners, tradesmen, and plant hunters to whom he sent for particular species. Humphry Marshall's rich collection of indigenous plants was a primary source for Hamilton's *desiderata.* Keen to acquire "nondescripts," his letters often noted an unrecognized species he had seen in a casual visit. In a letter to Marshall in 1796 he mentioned "a nondescript Sedum from ye West somewhat like ye Telephium." Seven years after this letter Michaux described and published *Sedum telephioides.*[1941] Twenty-five other plants are mentioned in this letter to Marshall from The Woodlands, 23 November 1796.

> *Dear Sir*
>
> *I am much obliged to you for the seeds you were so good as to send me of the* [Aesculus] *Pavia & of the Podophyllum or Jeffersonia.*[1942]
>
> *When you last were here it was so late, & you were of course so much hurried as to prevent your deriving any satisfaction in viewing my exotics. I hope when you come next to Philadelphia, that you will allot one whole Day at least, for the Woodlands. It will not only give me real pleasure to have your company, but I am persuaded it will afford some amusement to yourself.*
>
> *Your nephew* [Dr. Moses Marshall] *did me the favor of calling the other Day, but he too was in a hurry, & had little opportunity of satisfying his curiosity. I flatter myself, However, that during his short stay he saw enough to induse him to repeat his visit. The sooner this happens the more agreeable it will be to me.*
>
> *When I was at your House a year ago I observed several Matters in the gardening way different from any in my possession. Being desirous to make my collection as general as possible I beg to know if you have by layers or any other mode sufficiently succeeded any of the following kinds so as to be able with convenience to spare a plant of each of them. viz.* Ledum palustre[1943] Carolina Rhamnus[1944] –azalea coccinea[1945] –mimosa India[1946] –& Laurus Borbonia.[1947] *Any of them would be agreeable to me as also would a plant or seeds of* Hippopheae Canadensis,[1948] aralia hispida [Figure 49] – *Spiraea nova from ye westn. country* – Tussilago polymnia tetragonetheca[1949] – Hydrophyllum canadense[1950] – Hydrophyllum virginicum[1951] –polygala seneca, polygala Biflora–Napea scabra dioica–Talinum–*a nondescript sedum from ye West somewhat like ye Telephium*

1940 Boyd, *Jefferson Papers,* 605.

1941 [This Stonecrop is now referred to *Hylotelephium telephioides* (Michx.) H. Ohba. IPNI. ITIS. TROPICOS.]

1942 [Linnaeus' *Podophyllum diphyllum,* or Twinleaf, was referred to *Jeffersonia diphylla* by Persoon in 1805. IPNI. TROPICOS.]

1943 [*Ledum palustre* L., Marsh Labrador Tea. IPNI. ITIS.]

1944 [*Rhamnus caroliniana* Walter refers to *Frangula caroliniana* (Walter) Gray, Carolina Buckthorn. IPNI. ITIS.]

1945 [Possibly *Azalea calendulacea* Michx., now *Rhododendron calendulaceum* (Michx.) Torr., Flame Azalea. IPNI. ITIS.]

1946 [Perhaps *Mimosa indica* Pers., which today refers to *Acacia farnesiana* (L.) Willd., Sweet Acacia. IPNI. ITIS.]

1947 [*Persea borbonia* (L.) Spreng., Redbay. ITIS.]

1948 [*Hippopheae canadensis* L. is now *Shepherdia canadensis* L., Russet Buffaloberry. IPNI. ITIS.]

1949 [*Polymnia tetragonothera* L., recognized as *Tetragonotheca helianthoides* L., Pineland Nerveray, Sunflower family. IPNI. ITIS.]

1950 [*Hydrophyllum canadense* L., Bluntleaf Waterleaf. IPNI. ITIS.]

1951 [*Hydrophyllum virginianum* L., Shawnee Salad. IPNI. ITIS.]

2 kinds of a genus supposed by Dr. Marshall to be between convallaria & Rubia tinctoria [*sic, tinctorum*]. *I should also be obliged to you for a few seeds of your Calycanthus* [Lily of the Valley]—*spigelia marylandica*—[space left] *from Italy 2 of your oak with ovate entire leaves I must take the Liberty also to remind you a promise to let me have in due Season a plant of cornus maculata one of a native mountain Hairy Gooseberry, one of a mountain Cluster'd cherry & one of a White Raspberry from ye Westn. country. For all, or any of these, I will pay you any reasonable price you may fix, or if you would prefer having plants in return you may readily command any at the Woodlands of such kinds as I have duplicates of.*

A few days ago, I sent to Dr. Parke's a Box of plants for you, which I have the pleasure to find have gone forward. I have now added a few more (which the Doctor Marshal said you had not) & sent the package, together with a small packet of seeds to remain at Parke's for your order—on the back of this page you will find the names of the plants which I hope will arrive in good order & prove acceptable.

With Respects to Mrs. Marshal & your nephew I remain Sir Your friend & humble Servant W. Hamilton

[Hamilton to H. Marshall written on the verso of the letter:]

No. 1 *Chrysanthemum Indicum a new plant from China*
2 *Limodorum tuberosum*
3 *Orchis fimbriata Aiton*[1952]
4 *Aletris Farinosa*
5 *Spirea ulmana plana (from England)* [1953]
6 *_____ lobata purpurea*
7 *pancratium carolinianum*[1954]
8 *anthilyza cunonia*[1955] *(Cape of good Hope) green house plant*
9 *Aloe Barbadensis* [see Figure 91]
10 *_____ maculata*
11 *Arundo Bambos (Bamboo cane) green house* [*Bambusa arundinacea*]
12 *Smilacina (now menispermum) carolina* [*sic, carolinum*]
13 *Lagerstraemia* [*sic, Lagerstoemia*] *Indica a most beautiful flowering shrub frm. China requires the greenhouse*
14 *Gleditsia Horrida from carolina (open ground)*
15 *Robinia viscosa (nova from carolina)*
16 *Echites difformis Waltheri (fragrant flowers) green house*
17 *Olea Europea (green House)*
18 *Cistus Ca. (green house)*
19 *Cytisus flo: albo (green House)*
20 *Gleditsia monosperma*
21 *Iresine celosia*[1956] *(open ground after ye first winter)*
22 *Arundo donax open ground after ye winter in a warm place*
23 *Hydrangea glauca*[1957] *from Florida* [...] *open ground after ye Winter*
24 *Solidago maritima (probably the* [*Solidago*] *mexicana of Linnaeus)*

1952 [The Greater Purple-Fringed Orchid, later moved to *Habenaria fimbriata* (Aiton) R. Br., is recognized as *Platanthera grandiflora* (Bigelow) Lindl. IPNI. ITIS. TROPICOS.]

1953 [This may refer to *Spiraea ulmaria* L. later *Filipendula ulmaria*, Queen of the Meadow. IPNI. ITIS.]

1954 [Now recognized as *Hymenocallis caroliniana* (L.) Herb., 1821. IPNI.]

1955 [*Antholyza cunonia* L., African Iridaceae. IPNI.]

1956 [*Celosia paniculata* L., False Chaff Flower. ITIS. IPNI.]

1957 [*Hydrangea arborescens* L. IPNI.]

25 Orchis a non descript species with green flowers which are very Sweet[1958]

Pride in the "Woodlands" prompted Hamilton to engage William Bartram to draw novelties. For example, he wrote Bartram in what we take to be 1796:

Dear Sir,

I must beg the favor of you to make me a sketch of the Senecio nova, floribunda as it now blooms in my hothouse. For this obligation I will make you any compensation in my power. After this day it cannot be in season as its beauty is already on the decline.

I have moreover in my Hands at this moment, just arrived from England near 200 coloured plates[1959] *mostly of new plants (some of them from Botany Bay) which you ought not to lose the opportunity of viewing & they are shortly to be returned to the Gentleman who left them here. I hope therefore You will oblige yourself as well as me by coming here as soon as you can. After seeing them that you will be prepared to make the sketch I have required, in which I am more interested for the donor of American gardening than you are aware of. I have seen a figure and description of this plant as it flowered last season for the first time in Europe, under the name Senecio chrysanthemum*[1960] *by which I find it flower'd with me before it was known in Europe.*

During the Woodland's flowering years William Bartram was solicited again and again for opinions. In May 1799 Hamilton wrote:

...I have recd a plant from beyond the Blue Mountains by the name of Dracaena borealis, which it certainly is not—If a dracaena it is a nondescript species. I do not think however that it fully answers the characters sufficiently to be rank'd with that family—I wish your assistance in determining it, & will take no excuse. Your real friend & S [ervant] *W. Hamilton.*

On the bottom of the letter Bartram wrote: "The plant appears to be a Dracaena but not D. borealis. W.B."[1961] [It was Michaux who published the "Dracaena" in 1803; it is today recognized as *Clintonia umbellulata* (Michx.) Morong.]

Hamilton's villa (Figure 16), designed by an unknown architect, but certainly involving his own ideas for the nurturing of house plants, was a:

...wonderfully articulated plan...at once more modern, in point of comfort, and more archaeological, from standpoint of ornament, than anything of the period in America. Here as never before careful provision was made for corridors and cupboards and a maximum of height was provided by a variety of curving walls.[1962]

1958 Darlington papers, NYHS.

1959 Australian plants painted for Dr. John White. J. E. Smith sent specimens to Barton.

1960 [This may refer to *Senecio chrysanthemifolius* Poir. For other choices, Cf. IPNI.]

1961 Bartram Letters, Vol. 4 f.44, HSP.

1962 Robert. C. Smith in *Trans. Amer. Philos. Soc.* 43 (1953): 296. Detail of the entrance with its fan window, p. 295, fig. 13.

Hipólito José Da Costa dined with Hamilton 24 February 1799, and wrote of him as a "learned man very much taken with the subject of botany... In his hothouse he has many plants from China and Brazil, including 15 species of sensitive plant and many other kinds of mimosa... I will make a catalogue of all the plants he has. He also has tea trees, jambo trees, guavas, etc." How we wish we knew whether the catalogue had ever been made, and if so, where the manuscript is. Costa returned to Hamilton's on 6 March 1799, and Hamilton asked him a "catalogue of questions." He visited the hothouse again 26 March 1799, and on 30 March dined again, as also on 11 April when Muhlenberg was present. Dinner was undoubtedly preceded by a tour and appreciation of the latest successful flowerings.

Another important contributor to the wealth of the Woodlands was William Roxburgh, in charge of the Botanic Garden in Calcutta. After the visit of Thomas Horsfield, one of Barton's students and ship's surgeon, Roxburgh sent on 23 December 1793 to the president and members of the American Philosophical Society, "botle nut [*Areca catechu* Betel Palm], Eugenia malaccensis,[1963] leechee, mango, Jack, annasteen [mangosteen?], Teak, Interia picta, Ebony, Croton sebiferum." Roxburgh requested information on plants of the Philadelphia climate. John Vaughan, acting secretary of the Society delivered the plants to Hamilton in April 1794.[1964]

An unexpected substitute for a catalog of the Woodlands survives in an interleaved copy of Roxburgh's *Hortus Bengalensis* (Serampore, 1814) in the library of the Academy of Natural Sciences, Philadelphia. It must surely have belonged to our pioneer Philadelphia horticulturist, Bernard M'Mahon, who has entered foreign and North American plants from Hamilton with dates of delivery from 1797 until 1810. For example: the Akee tree *Blighia sapida* König, 1797; [the Seagrape] *Coccoloba uvifera*, 1802; *Paullinia carthagensis*,[1965] 1800; *Chrysobalanus icaco* [Icaco Coco Plum], no date; *Mimosa virgata*, 1797, etc.[1966]

Even before Hamilton's funeral at the Woodlands at 11:00 a.m. on 7 June 1813, his extraordinary collection had deteriorated. Henry Muhlenberg, who had been an occasional visitor, wrote to William Baldwin on 22 June, "You have heard, no doubt, that Mr. W. Hamilton has gone from us... What will become of his Garden is not known. It was almost a wilderness since some time."[1967]

In one of his many memoranda jotted on the back of letters Barton wrote, "June 2nd, 1803. In a single flower of Eugenia jambos,[1968] obtained from Hamilton's yesterday, I counted exactly 529 stamina!! Only one style!! another had 476 stamina, & one style." That Rose apple had been given to Hamilton by Julius von Rohr, a widely travelled Danish forester who enjoyed Barton's friendship and gave him 153 specimens for his herbarium. Von Rohr had brought a miscellany including *Eugenia*, palm seeds, and a *Pancratium* from Cayenne.

On 3 August 1804, Barton recorded:

> *I went to Hamilton's. In the open ground,–in great plenty, nearly ready to flower, Bartonia tennella [sic, tenella]. It grows in the sphagnum ground, its companions the beautiful orchis ciliaris,*[1969] *what I take for Eupatorium verbenaefolium,*[1970] *a species of Xyris, Eriophorum virginicum and Drosera. All these plants were now in flower. Pursh observed that the*

1963 [Now *Syzygium malaccense* (L.) Merr. & L. M. Perry, Malaysian Apple. IPNI. ITIS.]

1964 Archives, APS.

1965 [*Serjania curassavica* Radlk., Sapindaceae. IPNI.]

1966 Isaac Henry Burkill in his *Chapters on the History of Botany in India* (Calcutta, 1965), 21–25, with portrait of Roxburgh opp. p. 22, tells how *Hortus Bengalensis* was assembled.

1967 Darlington, *Baldwin*, 93–94.

1968 [Now *Syzygium jambos* (L.) Alston, Malabar Plum. IPNI. ITIS.]

1969 [The Yellow-Fringed Orchid, later *Habenaria ciliaris* (L.) R. Br., today *Platanthera ciliaris* (L.) Lindl. IPNI. ITIS. TROPICOS.]

1970 [*Eupatorium verbenifolium* Michx., referred to *E. rotundifolium* L. IPNI.]

> *Bartonia has much the habitus of Gentiana inaperta.*[1971] *Osmunda claytoniana grows in the same spot. He thinks the Bartonia [tenella] grows longer here than about Frankford. He thinks our Polypodium virginicum* [Virginia Polypody Fern] *is nothing but a variety of Pol. vulgare.*[1972]

Barton and Hamilton also loaned each other books. When returning Molina's *Chili*[1973] on 21 December 1802, Hamilton said he would welcome the return of "books I some time ago lent you, as I have now the occasion for them." William Bartram also loaned Hughes's *Barbadoes*[1974] and Walter, *Flora Caroliniana*, to Hamilton.

Pursh's experience at the "Woodlands" enriched his association with Barton, for they had met sometime before 1801 while Pursh was working for Samuel Breck at "Springhill," his estate in the suburbs of Philadelphia. They had found a common love and enthusiasm for botany, and Barton had sympathized with the struggle of an impoverished immigrant. On 14 September 1801 Pursh wrote in a neat hand, but in the English of one mastering a new language, asking forgiveness for failing to deliver unspecified drawings he had been engaged to make for Barton and his intention of returning monies Barton had advanced to him. The books that Barton had, with generosity characteristic especially of his younger years, loaned to him, among them Carver's *Travels*, he would return, unfortunately the worse for handling. Pursh wrote from "Springhill" to Barton 14 September 1801:

> *Dear Sir!*
>
> *I shall find it very hard, to excuse my Behavior to You, which I cann't but call very ill myself, compared to all Your kindness to me; notwithstanding this, whenever Your good Opinion of me I shoud not been sunk to such a low degree, as to hear my Defension, I am still in good hopes, to gain Your Pardon at last.*
>
> *At the time I agreed to macke the Drawings for Your work I was in full spirit and good will to try my uttmost to Your Satisfaction and my own honour, and did not thinke in the least of any disappointment to You or me this way; for I was certainly thinking, to have out of my gardeners work, now and then an hour for my own, which I intended to devote to this, for me so interesting Business. But how much disappointed I found myself in this Thoughts, after Mr. Breck did Comme out on the Place! From this very time, I have been obliged to work every day from sunrise till sunet, like the meanest day laborer or I may say as well Slave. Notwithstanding this I was still in hopes to fulfill my promises, by having the Sunday left as my own. And even here, I found it out of my Power to make great Progresses, because some little business for the house and my own commonly took up the best part of the beforenoon, and the afternoon I spent with taking a walk, to observe and collect some plants now and then macking some light sketches of drawings, or, by the way of resting myself from my week's labour, reading some english books. And so I could do but little, and what I did I never had time enough to finish as far to give it into Your hands.*
>
> *You, who knows my zeal for Botany well enough, may imagine Yourself, how deep I felt my unhappy Situation, where, if you would thincke Yourself in my Place for one moments time, I could expect Your Compassion and be sure of Your Pardon. As for my long kept silence, and*

1971 *Gentiana aperta* Maxim. of China.

1972 Botanical notes, no. 7, Barton papers, APS.

1973 Giovanni Ignazio Molina, *Saggio sull Storia Naturale del Chili* (Bologna, 1782).

1974 Griffith Hughes, *The Natural History of Barbadoes* (London, 1750).

to let you not know, wheter I would or could do anythink in this matter or no, I cannot but declare it myself for a very great fault in which I dit fall by Degrees, till I found myself quiet lost in it. The first time I allways was expecting, thinks would go better by and by, so that I would be able to fullfill my promises after all; afterwards I tryed to mack only light Sketches, which I intented to finish by more liesure in the winter, expecting your work would not be in want of him before Spring; But after You ditt call for him, I dit not know what to do, till, after thinking and thinking how to satisfie You yet, such a lengt of time was past which but me to shame, to such a degree, I was not able to let me be seen before you, when I was in town the last time, after I had not been there for 10 weeks. I was ashamed this month, to be for ever so, if you should not make me sure of Your Pardon, which I more wish as can expect.

The monney you advanced me upon this plan I shall return to You as soon I mack a Settlement with Mr. Breck which will be next Month, and send it to you or bring it you myself according as I find you thinking of me.

Gmelin and Carver I return to you with my uttmost thanks. Gmelin is in very bad order, which I am very sorry for; Band and Paper are very bad in it; but I am more of the opinion every thing did unite to make you dissatisfied with me, to robbe me even of the only Friend I was thinking to possess, which I has in my unhappy situation in this Country.

Among different Species of Plants new to me I found the Plant laing in Carvers Travels, which I suppose to be Melanthium dioicum[1975] *Walter's.*

In hopes, to recieve a kind Letter from You, I for ever remain Your most obliged and obedient Servant Frederick Pursh[1976]

Appreciation of Pursh's acumen in botany resides in Barton's notes:

***May 27. 1805**—Mentziezia* [*sic*, Menziesia] *is, at this time, in flower, in flower, in Landreth's open ground: but in general, the plants have done flowering. The habit of the plant is extremely like that of an azalea; Pursh much approved of my name M. azaleoides.*

Same day, Houstonia varians in flower in Hamilton's; in a pot in the open ground. Pursh is very confident it is varians of Michaux, says it came from some where near Baltimore. He says it [the Bluet] *has been in flower for some time. He (P) says Leptanthaeus gramineus* [perhaps *Leptanthus gramineus* Michx., Pontederiaceae] *grows up the Susquehanna. He says he has seen a species of Dipsacus, to every appearance wild, in a run, about 3 miles from Bethlehem. He thinks, from recollection, it is D. laciniatum* [*sic, laciniatus*]. *The leaves, he says, were very cou*[n]*ate, and would hold a great deal of water.*[1977]

When Pursh left the "Woodlands" under whatever circumstances, Barton engaged him full time in 1805 to aid in his botanical endeavors. An early drawing was of *Clitoria mariana*, [Butter Pea] (Figure 54). Pursh was to organize Barton's herbarium, assist with the Lewis and Clark plant specimens from the West, and to make field excursions.

In April 1806 Barton sent Pursh off to Virginia to follow in general the trails he had taken in 1802. Concerned as ever about Pursh's alcoholism, he wrote his brother Richard Peters

---

1975 [Now *Chamaelirium carolinianum* Willd., Fairywand. ITIS. IPNI.]

1976 Barton papers, APS.

1977 Written on the verso of a letter from Amos Gregg. Barton papers, APS.

Barton, whose farm was near Winchester, Virginia, a letter depicting Pursh's qualities and weaknesses, and demonstrating his own appreciation and sympathies for the man and his own inept attempt at psychological handling of the problem:

18 April 1806

Dear Brother,

In the course of about fifteen or eighteen days, you will, if he dont die drunk on the way, receive a letter from me, by the hands of a Mr. Fred. Pursch. When you see him, dont let on, that you had ever heard of him before. He is an excellent gardener, & a good botanist, who is travelling, at my expense, in search of plants, &c. I hope he will show you his written instructions, so far as regards the route which he is to pursue. I have requested him to call upon you; nay I have taken the liberty of saying, that he is to make Your house his home for a few days, and I wish him to be busily employed in looking after plants, while with, or near to you. I think you need not be ashamed to admit him to your table, but when you give him toddy, pray, I beseach, you, let the proportion of water be very great. Drinking is his greatest failing (and God knows it is a big one), but the poor fellow, who has been well educated, has merit, and I verily believe would not steal anything in the world, rum, gin, whiskey, or the like excepted. I have engaged him for five entire months, during which time he will make my money go, especially when he gets to some of the hill little towns between your vicinity and Staunton. Do keep an eye to him. Treat him with friendly, not too distant, civility. and yet dont make too much of him. You will find him entertaining, especially when a little of the toddy has found its way into his veins.

I am very anxious that he should visit the Capon Springs. Possibly, you may be able to go with him. If he does go, he is requested to pay particular attention to the plants of the place and also to the rocks in which the singular animal remains are found. All his collection is to be safely deposited with you.

Give him every instruction that you can about his stages, after leaving your house. If you can turn him from the paths which lead to grog, so much the better. I wish him to examine the 'Peaked Ridges,' and the margin of the Shenandoah. Cant you artfully tell him a story? about a man who, while passing along the foot of the Ridge, and among the rocks of Cedar Creek, was bitten by a tremendously big Rattle-Snake, which the traveller did not perceive, purely because his visual way was obscured by grog. The story must end with the death of the poor fellow, who was a man of great merit, and of an excellent heart; but who, alas! would drink other things besides the fine lime-stone water of the valley. Pursch, I must tell you, is not a little afraid of snakes.

But to be more serious. I have the expedition much at heart. It will be expensive to me: a few hundred dollars at all events. But if my traveller should keep sober half the time he is absent, he will collect many things of importance to me, especially as I fear that I shall not be able, this year, to take a tour which I had projected, into Tennessee, by your house. I contemplate a journey into Vermont, perhaps into Canada, as far as Montreal. But all this is very unsettled. Should the town be sickly, I dont move a peg.

I entreat you to write to me before Pursch leaves your house. Write by mail. Conceal nothing from me, respecting my groggy traveller. Let me know how he has conducted himself, and give me your opinion as to the

possibility of his drinking limestone-water, without rum, or something of the kind.[1978]

Barton then continues with other matters: to suggesting that his sister-in-law keep a book from which he has gained good advice and to which he attributed some of his success as a lecturer. He fears for the safety of fossils and sends some tobacco seed from Indian country, wanting to hear of its successful growth. He hopes the volumes of Edwards, *Natural History of Birds*,[1979] and Clavigero's *History of Mexico* have arrived, despite the precarious manner of the day in trusting letters and packages to travellers, sometimes strangers, passing through, and he hopes to be kept alert of such possibilities of communication, and of visitors to Philadelphia.

He then gives us a description of discouraging symptoms that he predicts will shorten his life to just a few more years. He expresses devotion to his family, Mary, young Thomas Pennant, and Sarah, and a happiness in the pursuit of science, which helps him forget pain.

Pursh spent several days in the area, visiting the Cacapon Mountains, but whether Richard accompanied him to Capon Springs we have not learned. Castiglioni wrote of the water of that area that "passing through limestone acquires a purgative quality and produces in persons unaccustomed to it pains in lower abdomen and a precipitate digestion." In his original manuscript he had noted "I myself experienced this annoying affliction during the few days I stopped there [in the vicinity of Winchester], but I quickly recovered as soon as I passed to the east of the Blue Mountains and stopped drinking the water impregnated with his noxious quality."[1980] The water did not serve Pursh as a substitute for his more spirited drink! He buried the roots of some of the plants, hoping to find them in good condition on his return, but they had, as Richard reported, decayed. Pursh visited Salt Pond Mountain, and Monticello, and returned to Philadelphia in November. One consignment of Pursh's plants was sent by Richard from Fredericktown, Virginia, "by Mr. Southgate" on 22 September. Pursh's "Catalogus plantarum collegit & quas observavit in itinere virginiano F. P. 1806," consisting of twenty-five foolscap pages documents his records, including ferns and mosses, by columns giving the "situations," localities, flowering month and collection numbers. It is with Barton's papers at the American Philosophical Society and is witness of his botanical training.

For the next seven months Barton employed Pursh in organizing his herbarium, and, based on a few surviving sheets on which one may recognize his handwriting, reading proof on Barton's "Flora Pennsylvanica." He also had Pursh drawing. His talents as an artist have not been fully appreciated, because his drawings beyond those in his *Flora* rest unpublished among Barton's *reliquiae*, and those published were not always signed or acknowledged. The only signed illustration in Pursh's *Flora* is Plate 7, "Solanum heterandrum," that is, *S. rostratum* Dunal (Buffalobean), which was drawn from fresh material in Lambert's garden, engraved by William Hooker, and returned to America with the purchase of Pursh's specimens.

Among the sixteen Barton portfolios are some interesting drawings of plants he had arranged for Pursh to picture from fresh material. These include unsigned, unlabelled *Sclerolepis uniflora* described as *Ethulia uniflora* by Walter, Pine Barren Daisy] (Figure 58) from, one may reasonably presume, either Quaker Bridge, Burlington Co. in 1808, or Egg Harbor, Jersey salt marshes, both visited by Pursh; the Rosepink *Sabatia angularis* (Folder XIII, item 6) logically from one of the same localities; *Iris fulva* Ker Gawler, which Pursh called *Iris cuprea* [Copper colored Iris] (Figure 57) drawn from Enslen's "growing garden" in Philadelphia, but collected by Enslen near New Orleans; and *Iris prismatica* [Slender Blue Iris] (Folder XVI, item 2) later described but not illustrated by Pursh (*Flora*, 30) from his Egg Harbor collection. From these and other instances it is plain that for

1978 Barton papers, APS.

1979 George Edwards, *A Natural History of Birds* (London, 1743–1751, 4 parts); Wood, *Lit. Vert. Zool.*, "...issued so irregularly and in such confusing combinations..."

1980 Pace, *Castiglioni*, 189.

Barton the failure to exploit immediately the work he had directed and paid for, and which had been completed by Pursh, was tragic. For Pursh to have left behind in Philadelphia drawings he had prepared and which he might have used in his *Flora* was a bitter twist of fate.

With plans progressing for his projected Flora, the area now greatly expanded, Barton dispatched Pursh on another journey. His contract with Pursh read:

> *The following memorandum is relative to transactions between us, previously to the present date. I agree to allow you the sum of eighty dollars, for your attention to my herbarium, from the time of your arrival in Philadelphia, in the month of November, last, to the present day.—In making this allowance, it is understood, that any deductions may be made from it, so far as this does not in the smallest manner, interfere with the just settlement of the accounts between us,* [since] *some of the papers relative to which are not, at present, to be found. In other words, I hereby make myself answerable for the honourable & just payment of all monies due from me to Mr. Fred. Pursh, agreeable to our original contract (signed in April 1806) & to the receipts, or memorandums, of money paid to him, by me, or by others for me, together with the above mentioned sum of eighty-dollars.*
>
> *+B S Barton & B. S. Barton*
> *Fred. Pursh. May 26th 1807*[1981]

Barton was withholding salary (to insure Pursh's return?) and was providing him only with expense money. Relations had cooled.

The next day Pursh left Philadelphia by stage for Easton, Pennsylvania, on his second major collecting trip for Barton, the trip designed to explore areas of New York that Barton, from his own earlier trip in 1797, knew contained botanical curiosities. He kept an interesting journal in which he described his route, activities, problems, and the specimens collected. From Easton he proceeded on foot to the Delaware Water Gap, and from there upriver to Point Jarvis, New York, then returned to the Gap, and stopped over night at Millford. On 23 June 1807 Barton received a letter dated 8 June from Millford, Wayne [Pike] County, Pennsylvania.

> *Sir!*
>
> *I take the opportunity of writing to you, though it will not be at full, as I intended to do; but as nothing materially interesting has occurred, I will give you an account of my proceedings infull no sooner, than I have arrived at Tyoga point; I arrived here last night, after crossing the river from an excursion to the Mini sinks; I have my package at this side of the Water gap at one Mr Howsers, which is about 40 miles below this, to which place I have to return; My course from here will be through a great part of the mountains, which we were so anxious to examine; an other portion of it below this, I have travelled through & as soon as I arrive at Mr Howser's which I expect will be to morrow, I intend setting out for the Beach woods to Tyoga; I have observed a great many plants, but as I have my Journal not with me, & am rather in a hurry of getting away from here, I only can tell you, that I have seen nothing new to You, excepting two species of Viola, one of them being very singular in having a spur a good deal longer than the flower; The Water gap, after all pains I have taken, in exploring it, did not answer our expectation, & indeed all those parts of the country about*

1981 "Exact copy," signed by both. Barton papers, APS.

here seem to produce nothing new to You, as far as I have been able to observe; for this reason I shall be in a hurry to get to Tyoga; I am convinced, when I have time to give a full account of my proceedings in examination of this country, you will percieve that I have spared no pains, in doing the utmost. The inconveniences I have to be under, on account of the want of a map, are indeed greater than you can think; I seem to travell in the dark & the satisfaction would be very great to get one; if it is in your power, I wish You to send me one to Tyoga; I expect to find Letters of further directions, & information about the place where you found Erica caerulia with any other notes & memorandums on the above place; Please to excuse my short Letters, but very probably, if I can get an oportunity at the gap to send one to Easton, I write You yet from there at full lengt; Meantime I assure you to be Your obedient humble Servant Frederick Pursh

Received 23 June 1807[1982]

On 12 June Pursh found a copy of an old map[1983] so fragile that he spent a day copying it. This copy he kept with him when he left for England, and it eventually came to the American Philosophical Society with the plant specimens purchased by Edward Tuckerman of Amherst at the sale of Lambert's herbarium. Finding his route so difficult, Pursh skirted the Pocono Mountains to Wilkes-Barre, arriving 16 June. He proceeded up the Susquehanna River, visiting "Tyoga Point," near Sayre, Pennsylvania, 3 July, and observed the vegetation, but seems not to have preserved many specimens—none were received by Barton. At Tyoga he received a letter from Barton, and apparently replied, but no such letter is among Barton's papers. He remained with Onondago as his headquarters from 10 July, having taken a stage from the outlet of Owasco Lake, New York, until 18 August collecting especially in the vicinity of Onondago Lake, with a trip to Oswego at the eastern end of Lake Ontario.

On 13 July Pursh recorded his "anxiety" to receive a letter from Barton, but not hearing he wrote on 17 July from "Onandago Hollow," New York:

By my letter from Tyoga point you will have got information of my proceedings & situation, I left that place the 6th inst. & proceeded up Cayuta Creek to the head of Cayuga Lake; I would have made a day or two stay at this place, but thinking letters would wate for me, at Onondaga, I proceeded on without delay up the Cayuga lake for about 15 or 20 miles & turned off towards the outlet of Owasco & Skeneatiles [Skaneateles] *lakes; Friday the 10th I arrived here, I enquired for Mr. Geddis & found that he lived about 6 m. from the town; Saturday I rested myself; Sunday visited the Salt springs, 5 m. from the Hollow, & Monday I went to Mr Geddes, I did not find him at home, having gone to survey a piece of land, but understood by his wife that there were no letters from that quarter come to Mr Geddes's hand; I still expected that these might, without her having any knowledge of it, & as Mr Geddes would call on the post office for his papers on his return, which office is opposit the Tavern I stay at, I left word there to desire Mr Geddes to call on me; Tuesday evening I had the*

1982 Pursh, "Journal," APS. The journal appeared serially in Meehan's *Gardener's Monthly* 10 (1868): 5 installments; 11 (1869): 8 installments; then published as *Journal of a Botanical Excursion in the northeastern Parts of the States of Pennsylvania and New York during the Year 1807* (Philadelphia, 1869); edited with alterations by William Martin Beauchamp (Syracuse, 1923; facsimile reprint Port Washington, N.Y., 1969). Rogers M. McVaugh traced Pursh's route and gives modern identifications of plants collected on the trip, *Bartonia* 17 (1935): 24–32.

1983 Reproduced in Ewan, "Pursh," 609.

pleasure & at the same time the mortification of seeing him, & not finding that any letters from Dr Barton came to his hand. The situation this has set me in, is the most distressing. With but 5: dollars in my pocket, I came to this place, which by this time is not sufficient to pay my bill at the tavern— All my cloathing & other things of value to me are God knows where—So, naked & without money at a great distance from all my acquaintances, I am reduced to a situation, not much fit for pursuing the business which my journey was intended for;—I can not think, what could or may be the reason, of Your setting me in this forlorn situation, sometimes I apprehend sikness may have prevented you from forwarding directions & money to me; at other times I have other Ideas & indeed sometimes the thought comes upon my mind, that you dont care, what becomes of me; as I found a great discouragement at my setting out from Philada in not being furnished with the necessary artickles or money, necessary to such a journey;—If this last, which I hope is not the case, should be true; I am but ill pay'd for my good intention at sacrifizing my life & my time, to serve you with all, what lays in my power with no other interest or gain to me, than merely to support my life for the present & do something, what might be of some credit to me, if acknowledged, in future. My situation at Philada was such, that I might have found employment one way or the other, if I had not pledged myself during the winter to you, to take an other journey; If you had been so kind, as to let me candidly know, even early in the spring only, that your situation or inclination, was such, that it would be best to give up the idea, of Supporting an other person in the manner as before; I should have been more pleased then, though I should have regretted it, as I have reason to be now, being left in the most wretched situation you could have me put in—You will excuse those Ideas, which I hope are very wrong, but my present condition, gives me room for nothing else, than gloomy & melancholy thoughts.—I will have to wait here in patience, untill I hear from you, & if this does not happen very soon, I must pay, by running away, & begging my way to Philad—

Those last two days I have been examining the nighborhood of the Salt springs & the Lake, & to morrow I intend to visit the Onandago Indians with Capt Webster; I intend to employ my time in excoursions about here, if possible to some good purpusse, the account of which you shall get from me, as soon as I know, which way to proceed from here & how. I close this letter, which indeed has been an unexpected & disagreeable one to me to write, with the assuring you, that I allways have & shall venture, to deserve your friend ship & esteem, & if I am not successfull in gaining it, it shall not be the fault of Your obed & humble Servt Frederick Pursh

Received 25 July [1984]

Pursh had recorded in his journal that same 17 July that he received a letter from Barton with twenty dollars, "which I was very much in want of." Had his letter gone out before he received Barton's letter?

Barton seems not to have doubted but that his letter had reached Pursh, but sensitive to Pursh's claim that he was ill supported, and suspicious that a good deal of the funds had gone for alcohol, scribbled this note onto the back of Pursh's letter: "I answered this letter Saturday July 25th & put the letter into the office myself, enclosing one ten dollar note, at the Bank of

[1984] Barton papers, APS.

the U. States, dated January 2d, 1807, payable to R. Dale, or bearer." His having put the letter into the [post?] office himself, suggests that Barton was suspicious of recent funds having miscarried. Pursh received the ten dollars 22 August.

On 20 July Pursh had made the first record for the Hart's tongue fern on North America, a fillip for continuing interest in Euro-American patterns of distribution. He called it "Asplenium scolopendrium." He recorded that it was found in "shady woods among loose rocks near Onondago, on the plantation of J. Geddes, Esq." Pursh found "this fern [not] mentioned by anyone to grow in America. I allways had a notion to be here & indeed I was quit[e] enjoyed to find my prejudice so well founded in truth." In 1935 Professor Fernald distinguished the fern as *Phyllitis scolopendrium* var. *americanum*.[1985] Here and in its other North American localities, especially to the south in Alabama, Tennessee, and Nuevo León, Mexico, it has persisted as a relict of a former wider Quaternary distribution.[1986]

Pursh met Mr. James Geddes, who had first come to Onondaga in 1793, found the Salt Springs, and believed producing salt would be a profitable business. He returned the following year with salt kettles and built his first salt blocks. "Dr. Barton may have been one of the stock holders."[1987] In 1810 Geddes served as Commissioner Surveyor to examine navigation of waters of the western parts of the state between the Hudson River and Lakes Ontario and Erie. With Geddes, Pursh explored what, in his journal, he called a "rough and dangerous place" where "Large chasms" between tumbled rocks made walking very precarious, where bushes hid large holes and fear of breaking a leg or "falling into a gulph"[1988] concerned Pursh. He then journeyed eastward through Utica, Johnstown, Ballston Spa, Saratoga, Glen Falls, and Whitehall to Rutland, Vermont, which he reached 8 September. His next letter details more hardships, the approach of cold weather and ill health. His trunk has never caught up with him, and he is in dire need of warm clothing. The letter reads:

> *Rutland, Sept 9 1807*
>
> *Sir,*
>
> *Last night I arrived at this place very much fatigued & worn by the long journey & especially by a complete rainy day; I left Fairhaven yesterday morning though it had rained all night, but having some appearance of clear weather, I went on, but had the misfortune to go through a drizzling rain all day. This is my present situation, especially being so very lightly cloathed, came very hard to me, but anxious of reaching the mountains, I so long have wished to see, I went on. The post goes from here to day, for which reason I would have deferred of writing now, as I will not have time to give you the account required, but as I did not find a letter, either at Fairhaven or Rutland for me, & my present situation is so, that I have nothing to cover myself from the inclemency of the weather, & only two dollars of money in my pocket, the anxiety of getting support from you speedily, must be great. The weather beginns to get very cold here, & as I am writing this I am trembling all over. I had to take the stage from Onondaga as far as it would be in my route, which was about 36 mi east of Utica on account of my weak state of health, occasioned by the Influenza, as I informed you in my last. This disease is so prevalent, everywhere I have been at, that I have seen only a very few people, who were not attacked with it; I have visited Balltown & Saratoga Springs, but made no*

1985 [Fernald's variety refers to *Asplenium scolopendrium* L., Hart's Tongue Fern. IPNI. ITIS. TROPICOS.]

1986 M. L. Fernald, *Rhodora* 37 (1935): 197–222. The plant is now known as *Asplenium scolopendrium* var. *americanum* Fernald, see Flora of North America Editorial Committee, *Flora of North America North of Mexico* 2 (New York, 1993): 235.

1987 So thought Beauchamp, *Journal*, 65.

1988 Beauchamp, *Journal*, 44.

stay, at either of them. In going over the plains from Saratoga to Gleens [Glen] *falls on Hudson River I did meet James Hamilton, who inquired which way I was going, I told him to Lake Champlain, hunting plants. he came from Lake George. Willm Hamilton will make a fine talk, out of this; This day I intend to rest myself but to morrow I intend to ascend one of the high hills which at a little distance surround this place; it is a great pity, I could not have been here sooner in the season; as I expect something interesting on the Knobs of those mountains. I hope you will not let me stay here so long without proper support to go on, as my excursions here can be of no great extent, & but little use, to what they might be if I can go to the highest part of the mountains. As the post goes off in a few minutes, I am obliged to close this letter, & hope I soon will have the pleasure & satisfaction of hearing from you; Please not to forget to sent me some money on account for to get some warm cloathes, as I am in the highest danger of my health in the situation I am in now. I remain Sir with the highest esteem Yours Frederick Pursh*[1989]

From 9 September until the 24th he stayed at Rutland taking short trips or staying indoors and trying various remedies to rid himself of influenza. On the 17th "I chewed most all day the tops of the branches of spruce, which seemed to do good to me." On the 22nd he sold his "fowling piece," and on the 23rd there came a letter from Barton. "This night I received at last & almost too late, a letter. My mind has been made up to return as quick as possible to Philadelphia, & I will do it now, the letter notwithstanding"—Had Barton urged him to continue his field work? He left Rutland for Kingstown, then taking a stage almost to New York. After a visit to the Elgin Botanic Garden at Columbia College, and presumably Hosack, he left New York by packet, disembarking 6 October in Philadelphia.

Unfortunately we have no record of what warmth greeted Pursh on his meeting with Barton. On his southern trip he had collected about nine hundred specimens, on this northern trip only about 150, and he had spent considerable time in taverns supposedly waiting for mail or recovering his health. Barton suspected undue amounts of the money he had allowed had been spent on beverages. Pursh had traveled alone, while Barton on his trip to Niagara in 1797 had the company of three companions, and so not the loneliness, nor the strong urge of the alcoholic, and the weather had been milder. Barton was obviously suspicious that at least one sum sent to Pursh had been misspent rather than undelivered. Pursh had taken the stage when possibly he could have been searching for new species.

On his return to Philadelphia and his lodging with the M'Mahons, Pursh, according to a commitment to Lewis at M'Mahon's suggestion, began to describe and illustrate the plants (Figure 93, for example), which had been sequestered from public view in M'Mahon's and Hamilton's gardens.[1990] He made another request for money still due him from Barton. He summed up his relationship, as he saw it, with Barton. Without funds, he was immobilized, faced with debtor's prison, or having to take up "menial work":

Philadelphia March 10th 1808

Sir!

As I find your time so much taken up with bussiness, that it seems to me, an arrangement of our engagements, which is so very desirable on my side, might be delayed, & such a delay being of the most serious injury to me; I take the liberty of giving the following lines to your consideration, which I hope may have the desired effect upon You.

1989 Barton papers, APS.

1990 Betts, *Jefferson's Garden Book*, 403.

On the first formation of the plan, of you employing me to travel & collect for you, I set out with the most disinterested view on my side, & by my own inclination & love to the science was such, that I wish'd to do with industry & fidelity every thing in my power for you, & devote a year or more to this service, without looking for any more reward of my labour, besides my support of live, than your approbation & the self satisfaction of having done something towards the science I admire so much.

My own conscience allows me to say, that I most scrupulously have followed up to this my resolution & neither trouble, fatigue or danger, with all the rest of vexations attending this undertaken, were any hindrance to me, to go chearfully on in the persuit of your interest; but not only this my own feeling, but the testimony of all the gentlemen, I had the honour to get acquainted with in the course of my routes, can if necessary proove this my assertion.

The expences of travelling I allways endeavoured to make as low as possible, & w[h]ere this conveniently not could be done, I spent, during the two seasons of travelling a great part of the money allowed by You to me for my services, with the only view of making the expenses to you as easy as possible; between this & the cloathing I wore out, but a very small sum was left for my labour; the being out of employ during the greater part of these two years, & upon expenses falling upon me, & the keeping myself in a decent way in cloathing, has of course brought me at least the period, that I either must go to jail or to work.

At present I have a very good prospect of employ in my own line of business near Baltimore, & the utmost period of the season has arrived to begin bussiness, the speedy settlement of our accounts will be the only thing, which can prevent me to be entirely ruined, as it is not in my power to leave this city without it, partly for necessary want of the little money which may be comming to me, & partly for reason of the easiness of my mind.

The reserved conduct, which you have shown to me this last season, must necessarilly make me a great deal of uneasiness, as I wished & pursued nothing with more zeal, than to merit your esteem & thanks, in every step, I have taken; but should I be so unfortunate as to be disappointed in this, I must satisfy myself with the consciousness of my own good will, & consider myself treated in the same manner, as I most allways had the misfortune, to get NO thanks, as the reward of my labour.

I therefore beg you, not to delay our settlement, as the injury done to me would be very serious, & the benifit to you certainly none. I remain with high esteem Your humble Servant Frederick Pursh[1991]

One day before the promised settlement Barton responded to "F. Pursh" who was still lodged at M'Mahon's. Remember the letter of 26 May 1807 relative to earlier services: "In making this allowance, it is understood, that any deductions may be made from it, so far as this does not in the smallest manner interfere with the just settlement..." Did "five of the most necessary papers" relate to deductions for periods of inactivity? Obviously the two men did not agree on the meaning of a "just settlement." And Barton was hard pressed with other debts. He wrote on 15 March 1808 to Pursh at M'Mahon's:

1991 Barton papers, APS.

Sir I am really sorry that it is not in my power, at present, to come to a settlement with you. By an accident, five of the most necessary papers for this purpose, are mislaid. But I, certainly, have no wish to delay the settlement. Until the necessary papers shall be found, and my time will admit of the full arrangement of the business, I send a check for the sum of twenty five dollars, for which please to send me, at your leisure, a receipt. I am, Sir, Your friend, B.S.B.

Exact copy.[1992]

Meanwhile another critical actor in the Barton saga appeared. Thomas Nuttall arrived in Philadelphia and sought out Barton. Apparently Pursh and Nuttall did not meet until both had returned to London. Once more Pursh addressed Barton. This letter may have been written after he had made contact with Hosack at Columbia College in New York, where he was soon to be engaged at the Elgin Botanic Garden on M'Mahon's recommendation. Barton scrawled a note on the cover of this letter: "F. P. 500 doll.—dated December 2d 1805.—to be paid on the 2d of december 1808. 'in one entire payment together with lawful interest yearly for the same.'" Was this the record of the contract he had made with Pursh when he first employed him? Pursh's letter of 13 December 1808 reads:

Sir

An unexpected absence from town, brought your note of last saturday only last night to my hands. I am exceeding sorry, to find that it is not convenient for you to comply at present with my wishes of an immediate settlement between us: My situation indeed is such as inevitably would require it, & I know not how to act to extricate myself out of the disagreeable embarrassments I am in; but I see I must submit to your decision.

The 25 Doll: you mention I should be exceeding glad to recieve, & if possibly you could make it ten or more, it would answer my ends more nearly. If you please to send me the money I shall return a receipt immediately, or if accidently I should be not at home, it safely can be left at Mr McMahons & I shall deliver a receipt at your house; or you may if you please appoint a time of my calling on you myself. I most earnestly beg, not to delay this longer than tomorrow, as I shall have to leave town for a few days next Thursday or Friday on business of great importance to me, but I cannot go without having some money. With the highest esteem I remain Yours Frederick Pursh[1993]

Barton answered the next day:

Sir,

It is not in my power to settle the matters between us, at this time, But this shall be done, without further delay, in the 16th of March, next. In the meantime, if the sum of 25 dollars will be of any use to you, it is at your service; a proper receipt for this sum being sent tomorrow morning, between the hours of eight and half past nine. I am, etc. Your friend B.S. Barton Saturday[1994]

1992 Barton papers, APS.
1993 Barton papers, APS.
1994 Barton papers, APS.

This is the last record we found of Barton's payment to Pursh. Each had been dissatisfied with the results of the trip, Barton with the meager number of plant specimens, Pursh with the lack of sympathy, understanding, and whatever the final recompense turned out to be. Barton was still striving to repay debts from his student days at Edinburgh, increasingly burdensome. Yet, in spite of his debts, his ambition led him to support another assistant: Thomas Nuttall.

One may easily underestimate Pursh's role as a botanical artist. William Bartram's drawings, usually identified, and those of Turpin and Redouté are featured in Barton's *Elements*. Today Pursh's drawings rest in Barton's archives, having been part of Barton's plan for his account of our national flora. Pursh made significant drawings of the Lewis and Clark discoveries; what we know today as *Purshia tridentata* [Antelope Brush] (Figure 56), *Calochortus elegans*, *Fritillaria pudica* (Figure 93), and *Ribes aureum* [Golden Currant]. Other species Pursh was to describe as new from other sources for his *Flora* included *Iris cuprea* (now *I. fulva*) (Figure 57), and *Pycnanthemum linifolium* (now *P. flexuosum*). That these drawings had been left behind with Barton must have been disappointing to Pursh when he was able to snip and steal away fragments of American species he had collected for Barton, from Lewis's specimens, and possibly some essentially completed descriptions, and so to organize his *Flora* in London under the patronage of Aylmer B. Lambert.

Pursh published Barton's discovery of "Arethusa medeoloides" eighteen years later in his *Flora*, 591, where he credited the novelty to Jacob van Vleck, a Moravian bishop and friend of Muhlenberg. This orchid was moved to *Isotria medeoloides* Eaton [today a variety of *Pogonia verticillata*, the Small Whorled Pogonia]. Lambert was to commission the artist William Hooker for several illustrations for Pursh's *Flora*. Pursh's treatment of the snippets he took with him to Lambert's is engaging. He cites *Menziesia ferruginea* as "On the Columbia river, M. Lewis. v.s. [v.s. meaning "I saw the specimen"] in Herb. Lambert." He does not accept, or mention, Barton's name "M. azaleoides" for *M. globularis* Salisb., which he collected under Barton's patronage in "Cacapon mts. near Winchester, Va. v.v. [v.v. meaning "I saw it living"]."[1995] If Pursh sought revenge for what he considered his ill-use by his patron, he certainly accomplished it with the publication of the *Flora* and its scant recognition of Barton.

Barton may have been sad as well as relieved to lose his knowledgeable aide when Pursh left for his two years at Hosack's Botanic Garden in New York: his skill in drawing, his organizing and curating the specimens that Barton himself had collected over the years, and specimens that Pursh had added to his herbarium. Pursh's name is frequently found as an authority among Barton's notes, and as annotations on specimens in Barton's herbarium: "Pursh much approved of my name Mentziesia azaleoides." Pursh had probably translated from the German, e.g., the common name of "Taenia cucurbitina. Pumpkin Tape-Worm," he proofread. His handwriting appears on the morsel of the six surviving proof sheets of Barton's *Prodromus Florae Pennsylvanicae*. He had examined and corrected that stillborn project. In sum, each profited richly from Pursh's years in Barton's employ, though by no means in a monetary way. Barton suffered frustration in the cost of lost time, while Pursh suffered his patron's choleric disposition, his own guilt, the pangs of neglect, and finally, rejection. Barton had early been concerned with the alcoholism of the lonely German immigrant and may have had hopes of helping overcome it, but the disease was too severe. It followed Pursh to New York, to the Lesser Antilles where he fled "for his health," to London where Lambert was said to have locked him in the study so he would complete his *Flora*, and to Montreal where in 1820 he died a pauper. Yet, with Lambert's prodding he left us the first North American flora, based on his own collecting, mostly at Barton's expense, the snippets quietly taken from the Lewis and Clark specimens, and those which had been contributed by correspondents toward Barton's intended work. Barton's ambitions had been too high for his purse, his health, and his professional duties.

[1995] Pursh, *Flora* 1: no. 340.

In the preface of his *Flora* Pursh tells of his ambition on coming to America of travelling widely to collect plants and of his taking the position at the "Woodlands" to expedite his general knowledge of plants of the country. Is he quite honest?

> *During my stay in this place, which was until 1805, I received and collected plants from all parts of North America; and when Michaux's 'Flora Boreali-Americana' appeared, which was during that time, I was not only in possession of most of his plants, but had then a considerable number not described by him.* [He then, he says, met Barton.]
>
> *He likewise, for some time had been collecting materials for an American Flora. As I was now very anxious to explore the more remote parts of the country, particularly the interesting ranges of the Allegany Mountains, I was enabled, by the kind assistance of this gentleman, to take a more extensive range for my botanical excursions, which during my stay at the Woodlands had been confined within a comparatively small compass, the necessary attention to the duties of that establishment not permitting me to devote more time to them.*
>
> *Accordingly, in the beginning of 1805* [1806], *I set out for the mountains and western territories of the Southern states...(in which the interesting high mountains of Virginia and Carolina took my particular attention)...The following season, 1806* [1807], *I went in like manner over the Northern States...*
>
> *Both these tours I principally made on foot, the most appropriate way for attentive observation, particularly in mountainous countries; travelling over an extent of more than three thousand miles each season, with no other companion than my dog and gun, frequently taking up my lodging in the midst of wild mountains and impenetrable forests, far remote from the habitations of men. The collections and observations made in the course of these journeys, all of which I communicated to Dr. Barton, were considerable.*[1996]

John W. Francis, who had known Pursh in London, tells us that:

> *We want the pen to describe the labors of Pursh, the author of Flora Americae Septentrionalis. His adventurous spirit, his hazardous daring, and his indomitable energy, present an example of what a devotee in an attached calling will encounter. He was for several years the curator of the Elgin Botanic Garden, and widely travelled through the United States. Lambert, the author of the 'American Pines,' afforded him great aid in the production of his volumes, and cherished, as I personally know, great regard for the benefits Pursh had conferred on American botany.*[1997]

But Francis had confided to a friend on 15 February after brief remarks on Thomas Nuttall that:

> *Poor Barton was also taken in by* [Nuttall]*—as to Pursh they here admit him to have been a grand practical Botanist—These particulars I have had from Sir Joseph* [Banks] *& Mr. Brown. But after all, perhaps Pursh is*

1996 Pursh, *Flora*, preface, viii–ix.

1997 John Wakefield Francis, *New York during the Last Half Century...* (New York, 1857), 20–21, reprinted verbatim in *Old New York; or Reminisciences of the past Sixty Years* (New York, 1858; reprinted New York, 1971), 29.

his own worst enemy: drunk morning, noon & night. This may be of use to you & it may be advisable to keep these anecdotes on your own dura mater.

6 1/2 oclock pm—I had written the preceeding previously to my going out—& I am now returnd from a visit to your old friend [James] *Dickson, selling seeds &c as usual in his little covert Covent Garden...Dickson has augmented my catalogue of poor Pursh's offences. He recd the special notice of Count Orloff and snubbd him. He has borrowd money from every one and among others from the old cryptogamist* [Dickson] *and has gone off without adjusting a single account. Sir Joseph B, it seems, found him a perfect nuisance at last; presented him with money and sent him to America again.—Dickson adds Pursh married a short time before he left London a port girl, i.e., a waiting girl. I suppose Mrs. Pursh accompanied her husband. You know I harbour nought against Pursh. I merely give you information—*[1998]

Pursh probably met his London friends at meetings of the Linnean Society. After the completion of his *Flora* he composed a "Prospectus of an expedition to New Mexico and to California." His qualifications he gave as:

A residence of nearly twelve years in North America, which as far as my humble means would permit, were chiefly devoted to researches in Natural History, have not diminished my desire, on the contrary have made me much more anxious to persue this my favorite plan, being so much more acquainted with the mode of travelling in those wilds & hardened to its privations. But considering it as a fruitless undertaking to perform it without proper support, as I allready had experienced it in similar persuit in North America, I resolved to throw myself on the liberality of a nation, where science in general have found friends, encouragement & support...

The difficulties & dangers to go through, are great & many, but firm resolution, perserverence, & circumspection have done wonders in similar undertakings & I trust for the good of Science they will do the same now.[1999]

Pursh included as a member of the proposed expedition Nuttall who, he said, was enthusiastic about the trip, and so they must have made peace over Nuttall's chagrin that Pursh had published his description and the name of a new genus *Bartonia.*[2000] Pursh gives no credit in his proposal for any American aid. The sum he suggests necessary for expenses was between £1000 and £2000 to be raised by subscription among "Patrons and Promoters of science," and he estimated that two and a half years would be sufficient. Once across the "Andes" west of Santa Fe he expected to find "plenty of navigable rivers falling into the Gulf of California"! Specimens would be the property of patrons, and publication of their travels "including all the Drawings & Charts collected" would be sufficient compensation to him and to Nuttall. The proposal was probably sent to Banks for his encouragement and now rests in The Natural History Museum, London. Nowhere have we found any comment on, or notice of it. Among the reasons it did not meet approval was also the fact it would be a British expedition into disputed country.

1998 Francis papers, NYPL.

1999 J. Ewan, "Pursh's 'Prospectus' (1814?)," *Huntia* 3 (1979): 83–86.

2000 Now *Mentzelia decapetala* (Pursh) Urban & Gilg. in the Loasaceae, Pursh's use was too late to honor Barton in 1812. [*Bartonia decapetala* Pursh, ex Gentianaceae *Bot. Mag.* 36: t. 1487. *Bartonia tenella* had been published in 1801. IPNI. TROPICOS.]

Banks, it would seem, found another way of relieving himself of a pathetic and troublesome nuisance. The unidentified recipient of the letter that follows may have been connected with the Selkirk Expedition, which had been planned to explore the Red River of western Ontario. Pursh was appointed as naturalist, but when a member of Lord Thomas Selkirk's party was murdered, plans collapsed, and Pursh was stranded in Montreal. The letter from Soho Square, 10 December 1815, reads:

> *At the request of Mr. Frederick Pursh I beg leave to inform you that I consider Mr. Pursh as a person well skill'd in Botany. I have deriv'd from his Book Flora americae septentrionalis much good information relative to the plants of the western world & I think him capable of making still very great additions to our knowledge of that interesting country.*
>
> *In consideration of his knowledge of Botany & in hopes that he may pursue his labors & still further improve it, I have at different times advanced him money in the hopes of enabling him to Return to America & I beg leave to assure you Sir that I shall think my money well bestowd if he resumes his studies altho I never receive any part of it again. I have the honor to be Sir Your faithfull Hble Servt Jos Banks*[2001]

Although he had not received support for his trip to California, he had been given the money and encouragement to sail for Montreal. Plans for the expedition to the Red River of Canada were cancelled. Pursh then began collecting for a "Flora of Canada," but his specimens burned in a fire.

Of Pursh, Benjamin Silliman, who met him in Canada in 1819, found his conversation "full of fire, point, and energy," his manner "although not polished...good humoured, frank and generous."[2002] So Barton may have found him when he met him at Hamilton's "Woodlands." Pursh died in Montreal in 1820 and was buried in potter's field, but after some years horticulturists removed his body to the Mount Royal Cemetery. Nearby now lies another botanist, E. H. Wilson, with a *Metasequoia* (Dawn Redwood) at his head. Rafinesque had remembered Pursh in *Medical Repository*:

> *Burshia Tetandria tetragynia:—akin to the proserpinaea...B. humilis humble burshia... This new plant was first discovered by Mr. Bursh in New Jersey. I have since found it in the county of Sussex, state of Delaware, it is an aquatic plant, which only rises to the height of a few inches.*[2003]

The plant is now known as the Low Watermilfoil, *Myriophyllum humile* (Raf.) Morong. A. Gray, Cambridge, 13 Feb. 1843, wrote to Edward Tuckerman:

> *Why not give us an article on Pursh (Purshiana): biograph. sketch, notice of his life and travels & his connection with Lambert—return to Canada—death (Macrae has some facts, and Sheppard of Canada must have more, LeConte of New York recollects him well Something may be raked up at Philada—and to that add remarks on plants erroneously* [entered in his] *Flora* [Bor. Amer.] *Is it not a good idea?*[2004]

2001 J. L. H. Curry, Autograph Collection, LC Manuscript Room. Reproduced in *Huntia* 3 (1979): 83.

2002 *Remarks made on a short Tour between Hartford and Quebec in the Autumn of 1819* (New Haven, 1820), fn. pp. 323-325. Pursh had little regard for accuracy as he told of his life to Silliman.

2003 *Med. Repos. 5* (1808) hex. 2: 357.

2004 Tuckerman Letters, American Antiquarian Society. Tuckerman did not respond to the suggestion. Edward Tuckerman (1817-1886) became a lichenologist of note, having studied under Elias Fries in Uppsala (Wm. R. Maxon in *DAB*; *TL-2*). While in London on his return to the United States in 1842, he attended the Lambert Auction and purchased a part of Pursh's herbarium (Ewan, "Pursh," 624-626). In 1868 Tuckerman presented

Thomas Nuttall

After Pursh came a Yorkshireman, Barton's second paid assistant, his "most awful instrument in working out a pure intent." Thomas Nuttall (1786–1859, Figure 39), arrived in Philadelphia in the summer of 1808, alone at the age of twenty- two, and became one of North America's most important early naturalists. Orphaned when twelve years of age, Nuttall, his two sisters, and mother, lived at his birthplace, Long Preston, a village in the Ripple Valley where "the country is spacious and elevated, over it the winds blow unimpeded, increasing the exhilaration of a fair day or the chill of frequent rains."[2005] In later years Nuttall remembered the little owl and magpie.[2006] It was, however, while he was living for seven years as a printer's apprentice to his uncle Jonas Nuttall in Liverpool that he discovered that Hall of Muses, William Bullock's Museum where *naturalia* from moors and mountains, from Captain Cook's voyages to the South Seas, and from other far away places were displayed. Indeed, the fifth edition of Bullock's *Visitors' Guide* (Liverpool, 1805) had come from Jonas Nuttall's press, two years after the founding of William Roscoe's Botanical Garden with its conservatory serried with exotics.[2007] In the nearby village of Settle lived John Windsor, Nuttall's "earliest botanical friend," whom he was later to commemorate with the genus *Windsoria*.[2008]

Before coming to Philadelphia, therefore, Nuttall was acquainted with Linnaean classification, the names of many plants and animals, something of geology, the character of gray millstone grit, the nature of a museum and, importantly, the spirit of its keeper. Nuttall's biographer, Jeannette Graustein, queries what his motive may have been in forsaking an established future in his uncle's profession to a "life so single in its dedication to the natural history of America."[2009] He may well have absorbed the vision of far-off places from his friend Windsor, who told him of his friend, Thomas William Simmonds, who went to Barbados and Trinidad. Nuttall named *Simmondsia* for him.[2010] That, stirred into a matrix of the deep appeal of the becks and tarns of his native heath, his fortunate friendship with Windsor, the visits to the botanical garden and museum, contrasted with the confining aspects of a print shop, led this young man fond of solitude to leave for the New World.

Was Nuttall's crossing the Atlantic on the *Halcyon* a portent? For ornithology was to play an important part nearly equal with botany in the years to come. When Nuttall arrived in Philadelphia 23 April 1808 from Liverpool, besides the hanging bird and chimney swifts, there were the nighthawks from their Central American wintering places, strawberries were in bloom and oats [*Avena mollis*] were sown in the field beyond the Schuylkill. How Nuttall came to meet Barton rests on the tale of Thomas Meehan, who took a particular interest in botanical stories and edited a succession of monthlies on plant lore.[2011] Meehan was told by Charles Pickering, who knew Nuttall in his later years at the Philadelphia Academy of Sciences and in England, that soon after Nuttall came ashore he was, naturally enough, noticing the plants as he walked along the Schuylkill. He saw a catbrier, *Smilax*, and presumed it to be a passion-flower. Perhaps he remembered a certain tropical *Passiflora* in the greenhouses of the Liverpool Botanic Garden with smilax-like leaves. He sought a book to satisfy his curiosity, and was told about Barton's *Elements*. Failing to find a copy in the local

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Pursh's herbarium to the APS, and it is now in the ANSP (Ewan, "Pursh," [599] fn. - 600. James Macrae (d. 1830) collected in New York and Canada, his specimens cited by Torrey and Gray, *A Flora of North America* (New York, London & Paris, 1838–1843, 2 vols.). William Shepard (1783–1867) while executive councillor in Lower Canada was "one of the pioneers of natural history" (Ewan, "Pursh," 621).

2005 Graustein, *Nuttall*, 4–5.

2006 [The European Magpie, *Pica pica* L., 1758.]

2007 Graustein, *Nuttall*, 11.

2008 Nuttall, *Genera*, 1: 70. [The grass *Windsoria* Nutt. was referred to *Triodia* R. Br. IPNI.]

2009 Graustein, *Nuttall*, 12.

2010 *Simmondsia californica* Nutt. ex Hooker, *London J. Bot.* 3 (1844): 400. pl. 16. [Goatnut or Jojoba. ITIS.]

2011 Thomas Meehan, "Nuttall," *Gardener's Monthly*, 2 (1860): 21–23. Meehan does not mention Barton's patronage of Nuttall.

shop, Nuttall sought the author. Or had Nuttall come with an introduction from an English correspondent?

To think that Barton was to begin his next course of lectures three days later at twelve noon! We may conjecture that the professor invited Mr. Nuttall to attend. "He had constant access to my house, and the benefit of my botanical books," Barton wrote shortly before his death.[2012] These first years Nuttall studied in Bartram's garden and met a coterie of plant enthusiasts, for some of whom he was to name genera: Enslen, Lyon, Baldwin, McClure and Wistar, all of whom aided the newcomer over the years. Nuttall was soon employed as a journeyman printer by Dennis Heartt at 58 North Fifth Street, down the block from Independence Hall where, on the second floor, Peale's Museum bore some resemblance to Bullock's back in Liverpool. Thus vocation and avocation had survived the transatlantic passage. From a memorandum that Barton dated 1 August 1808, we know that Nuttall had made a call with botanical questions on the professor:

> *The Vallisnaria [sic, Vallisneria] is now in flower, at least the female. Mr. Nuttall this day brought me a good deal of it, which he collected in the first creek below Gloucester, on the Jersey side. He says the creek is full of it, and that the leaves & also the flowering scapes (or the female) laid upon the water, except that the flower itself was elevated. He saw some scapes evidently spiral but not a single one near as much so, as in the drawing by F. Pursh. He suspects that the geese & white cranes eat this plant, as he saw numbers of them among it.*
>
> *The water in which he saw this plant (in the creek) would not, he thinks, even at high water, be deeper than to the knee. If this be the V. spiralis, the plate in Curtis is, indeed, very bad. It answers, however, very well to Linne's description of V. spiralis,*[2013] *in the denticulation of the leaves.*[2014]

The reference to Pursh in this note relates to an earlier memorandum Barton had made in November 1806:

> *F. Pursh is confident that Vallisneria of the Delaware (and he has lately seen the same species in his western travels) is certainly the same species as the V. spiralis.*

Again in want of a botanical assistant in his grand plan for his "American Flora," Barton now enlisted Nuttall to carry on. John Lyon had returned on 2 April 1809 from seven months and twenty-three days collecting in the Carolinas and Georgia, a trip that cost him $252, and had yielded living plants that he would feature in London sales.[2015] He would have been generous in informing Nuttall on the ways of American backwoodsmen and horses, and the ever present threat of illness along the way.

Nuttall left Philadelphia 4 June 1809 on his first trip for Barton, taking a coastal vessel for Lewes inside Cape Henlopen on his way to the Great Cypress Swamp of Delaware. Pursh had botanized at Quaker Bridge, New Jersey, and on reporting his particular prize to Barton had thereby raised questions about salt marsh species that Nuttall might settle on this trip. From

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2012 Barton papers, APS.

2013 [*Vallisneria spiralis* L. is now submerged in *Vallisneria americana* Michx., American Eelgrass. IPNI. ITIS.]

2014 Barton papers, Botanical Notes no. 8, APS. Barton had delivered a paper before the APS 6 Feb. 1801 on a "New species of Vallisneria growing near Philadelphia, called by him V. americana," and showed a drawing. Latrobe and committee recommended it for publication (APS archives, 17 April 1801). Barton's paper, however, appears not to have been published.

2015 Ewan, "Lyon," 5-69.

Lewes-town, 16 June 1809, Nuttall wrote Barton "Honored Sir, I fear you have been anxiously expecting to hear from me before this time, but as I could not communicate any thing with certainty respecting the subject in hand at an earlier period you will perhaps excuse the delay." Two days earlier he had alarmed the occupant of a farmhouse because of his mosquito-bitten face. Then, or from other attacks on the trip, he contracted malaria from which he was to suffer for years. Notwithstanding the June heat and mosquitoes, he collected water lilies, spatterdocks, and bladderwort—not the easiest botanical trophies to acquire.

For the bladderworts Barton entered the following notes:

> *Bot Notes No. 1*
> 1. *U*[tricularia] *setacea on the margins of ponds & slow moving waters; not in water. General height from two to 3 inches not more. Mr. N*[uttall] *saw it abundantly in flower in the beginning of July.*[2016]
> 2. *U. violacea* [Violet Bladderwort] *in ponds of water; in flower about the same time; grows in the pond on the margin of which the U. setacea grows. Mr. N. never saw it except in Mr. Hall's pond, in Lewes-town.*[2017]
> 3. *U. ceratophylla*[2018] *growing in Shad-Creek. in ditches near George-town* [Delaware] *& Sometimes growing in water 3-4 feet deep,—rather stale water, flowers in June & beginning of July—Root has no connection whatsoever with the ground. Neither has the U. violacea any connection with the ground. U. setacea and & U. cornuta both grow in the ground.*
> 4. *U. cornuta* [Horned Bladderwort]. *In a Savannah near Georgetown Centre of Jersey County* [now Sussex County] *within a miles of Lewes town. General height 3–6 inches. Very common.*

Nuttall had recorded, "On the beach lay in great abundance what is called the King Crab." What we call the horseshoe crab was first called Molucca crab, "Cancer moluccanus" from the mistaken belief that it was first collected in southeast Asia. It had first been reported from Maryland in 1698 by Rev. Hugh Jones, but before that it had been recorded by Thomas Hariot from Virginia in 1588 and drawn in watercolor by John White. As seen from above and below it had been sketched by Rev. John Banister in the 1680s in Virginia.[2019] Nuttall had no doubt seen what zoologists call today *Limulus polyphemus* in Bullock's Museum. Of Nuttall's location "the modern name 'Bombay Hook' designating the strip of beach that extends southward several miles from the village of Woodland Beach, Kent County, Delaware, is derived from 'Bumba' the Swedish word for the King crab or *Limulus*. The Swedish settlers gathered these animals by the thousand, to be dried in the sun, crushed, and used for fertilizer. The name for this part of the Bay shore is properly pronounced 'Bumba Hook.'"[2020]

Nuttall continued his letter: "On Thursday I visited the Cape. On the sand beach I found in great plenty a plant resembling the Heath, and so called here, full of fine yellow blossoms." This was [the Beach or Golden Heather] *Hudsonia ericoides* of the pine barrens. In 1818 in his *Genera* Nuttall was to distinguish and name a second species, *H. tomentosa*. Pursh had collected *Hudsonia tomentosa* at Quaker Bridge in 1808, but failed to distinguish it from *H. ericoides* when he wrote his *Flora*.

2016 [Referred today to *Utricularia subulata* L., the Zigzag Bladderwort. IPNI. ITIS.]

2017 [Barton would go on to describe the Violet Bladderwort, *U. violacea*, Fl. Virg. 6, 1812, but was too late. *Utricularia violacea* Barton would be superceded by the earlier name by R. Brown, Prod. 431. 1810. IPNI. ITIS.]

2018 [Now Swollen Bladderwort or Walter's *Utricularia inflata*. IPNI. ITIS.]

2019 Ewan & Ewan, *Banister*, 339, 363, fig. 69.

2020 Robert R. Tatnall, "Nuttall's plant collections in southern Delaware," *Bartonia* 20 (1940): 1–6.

One request Barton had made was that Nuttall search for *Illicium*. Nuttall wrote, "Coming to the head of Indian river I anxiously expected to find Illicium. I sought for it carefully & went 2 or 3 miles round its head but all in vain. I am persuaded it has never been found here." The Indian River of Florida had become confused with the Indian River of Delaware, and somehow the River St. Johns of Florida, Bartram's famous locality for *Illicium parviflorum* [Yellow Anisetree], had become snarled in the confusion. The more wide-ranging *Illicium floridanum* [Florida Anisetree] grows from the Altamaha River to southeastern Louisiana. Nuttall's power of description is demonstrated here:

> *The old man went with me and in about a mile from his home we began to enter one of the most frightful Labyrinths you can imagine it was filled with tall tangling shrubs thickly matted together almost impervious to the light amongst the shrubs was the Ilex already mentioned, Smilax, etc. It was very wet; knee deep in Sphagnum, if you stept off the bridges or wooden causeways. There were some open places called savannahs, but were literally ponds at this time of the year, but are dry in summer...and on the edges of these ponds grew Cupressus disticha. In a shady part of the swamp the old man pointed out to me what they here call the Bay-bush which they use for dying yellow, it was not in flower: I suppose it must be the Hopea. I saw nothing else new that I remember, & I proceeded to Dagbury where I was very kindly entertained by Mr. Wells. On Wednesday I went across the swamp about 7 miles without meeting with one extrordinary vegetable excepting the Bartonia*[2021] *but which species I could not tell.*

The "Great Cypress or Cedar Swamp," about fifteen square miles in area, is the northernmost stand of Bald Cypress (*Taxodium distichum*) in the United States. The once flourishing local industry of lumbering for "cypress" shingles, recovering submerged stumps, and burning of the swamp forest has ceased. Barton had instructed Nuttall to note the folk-names of plants: "Bay-bush" (Sweet Gale or *Myrica gale*) was one of them, *Hopea* is now called *Symplocos tinctoria*, "Horse-sugar" or "Sweet-leaf," here at the northernmost station of its principally southern range. The name *Bartonia* was given by Michaux, then by Muhlenberg to a small yellow-flowered gentian. Nuttall concluded his letter:

> *I expect the person by whom this letter and the plants come will take the utmost care of them. The plants are in 2 boxes the 1st contains all the plants I found about Lewes-town & the Cape, the 2d contains chiefly what I found in the road to Dagsboro* [Dagsbury] *and the swamps...I have not got the tin boxes you spoke of in your letter. Yours &c.*[2022]

Nuttall's specimens, forty-three, laid in rough paper as preserved at the Academy of Natural Sciences, Philadelphia, and reported on by Tatnall, include not only *Hudsonia tomentosa* Nutt., beach heather, but red bay, *Persea borbonia*, again detected at its northernmost locality on the coastal plain. On this, his first foray into American swamps and shores—and Nuttall was to collect as far west as the lower Columbia River and San Diego—he evidenced the keen perception of the best of field naturalists. The yield of this southern

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2021 [*Bartonia tenella* Muhl ex Willd., 1801. Gentianaceae.]

2022 Barton papers, APS. Published by Tatnall with notations. Can this mention of a "tin-box" be witness of the use of the vasculum in America well before Charles W. Short's "Instructions for the gathering and preserving of plants for herbaria" (1833)? Barton may have been the first American botanist to use the tin-box in botanizing; or was it Adam Kuhn before he abandoned field work? D. E. Allen has written on "The history of the vasculum," *Proc. Bot. Soc. Brit. Isles* 3 (1959): [135]–150; and "Some further light," *Proc. Bot. Soc. Brit. Isles* 6 (1965): [105]–109.

journey was satisfying both to Barton and to Nuttall. Hospitality along the way, Nuttall wrote to his family back in Yorkshire, made the trip so inexpensive that he declined Barton's assistance in defraying expenses.

Nuttall's second trip for Barton followed Pursh's route of two years before, to northern New York, and he left richer notes. He stayed at Bushhill where Pursh had "stood over night." On 9 June 1807 Pursh had written in his journal: "all the country about here is nothing but heaps of mountains, interspersed by small streams of water, some of them so wild that there is no access to them." Nuttall wrote from Wilkes-Barre, Pennsylvania, 10 August 1809:

> *Honored Sir: I left Philadelphia ½ after 4 in the morning and reached Bethlehem in good time Saturday evening, I spent Sunday in town, & on Monday went as far as Heller's-gap*[2023] *where I staid all night—on the road to Beth*[lehe]*m. At Flour-town where we breakfasted I met with abundance of the European Hop growing wild and a species of Coryopsis near flowering; stems angular each angle spreading into a leaf-like process, & a scandent plant slightly lobed or palmate into 5 divisions. I admire the interesting appearance of the country about Bethm. being romantically diversified with the high hills covered with grand forests.*

Nuttall had been following Barton's admonition to watch for foreign plants.

> *About a mile from Beth. in a high wood I found a fine Orchis, the root was an articulated squamous bulb; stem nearly naked, the leaves white & sheathing attached so closely to the stem as to be barely perceptible as in this respect some thing resembling the Arethusa bulbosa, bearing a loose spike of small yellow clay colored blossoms, excepting the lip of the nectary which was 3-lobed white elegantly sprinkled with a few purple spots—A mile further I met with Orchis fimbriata*[2024] *bearing a large thick spike of blossoms. I lodged in the gap at White's tavern under the blue mountains.*

The "fine Orchis" was Putty-root or Adam-and-Eve, which Nuttall distinguished as a subgenus of the coral-root orchid in his *Genera*. We identify it today as *Aplectrum hyemale* (Muhl. ex Willd.) Torrey.

> *On the Pocono I met with an elegant variety of the Orchis ciliaris*[2025] *with white flower, the Helleborus trifolius* [*Coptis*], *the rubus dalibarda, & in very wet places, the elegant Gaultheria prostrata on tasting the leaves of which I was much surprised to find such a simularity with the Gaultheria procumbens, a large species of Willow-herb, very common in gardens, 2 species of Trillium one very minute, the other like the T. Umbrosa but of its identity I am very doubtful, another species of Ribes which appears to be a kind of Currant-bush but the other species was a gooseberry. 2 species of Viburnum one with entire leaves, & the other with large corrugated leaves, resembling those of the Hazel filled with clusters of scarlet ovate compressed berries, a lilliaceous plant, having generally 3 broad, pointed shining leaves from the center of which a naked peduncle supporting a loose spike of from 3 to 6 flowers, being now in fruit which has a dryish*

2023 Heller's Tavern appears in many early accounts, at least until 1823. *Pennsylvania Mag.* 14 (1890): 315.

2024 [*Platanthera grandiflora* (Bigelow) Lindl., also known as *Habenaria fimbriata* (Aiton) R. Br., is the Greater Purple-fringed Orchid. ITIS. TROPICOS.]

2025 [Today, *Platanthera ciliaris* (L.) Lindl., formerly *Habenaria ciliaris* (L.) R. Br., the Yellow-fringed Orchid. ITIS. TROPICOS.]

ovate round bacca, of a fine ultramarine blue color—before acoming onto the mountain in company with the Lonicera grew a species of Corylus [Hazelnut] *with a very long husk, drawn together into a narrow neck towards the opening in which the nut was buried nearly ripe & of an agreeable taste, I met with the mountain-ash & Acer saccharinum* [Silver Maple]*—I spent at least half a day upon the Pokono but could neither see ponds nor lakes, consequently I missed the Utricularia from which I was not a little grieved, but intend to give it another looking over.*

Insectivory being of particular interest to Barton, he had solicited this desideratum, the *Utricularia*. Pursh in 1807 had met Mr. Jacob Hart at Wilkes-Barre, a Barton acquaintance, and together they had made a "walk along the river" for fossils. Pursh had characteristically recorded persons he met on his excursions; Nuttall seldom commented on persons in his letters. "At this time, I shall omit going to Wyalusing but intend to visit it on my return. I was told there was hardly any road to Wyalusing except thro Wilkesbarre, & I wished to proceed on my journey near Wilksbarre[.] on the rocks I found a campanula. I believe the identical species so common in the north of England, and well known by the name of the Blue-bell." Nuttall had decided to hasten on via Chenango Point, now Binghamton, instead of taking the longer route via Wyalusing. "I should be glad to receive a letter from you, how you have recieved the plants I may send, to be left, at Wilkesbarre till I shall call for it," and he signed the letter "Yours respectfully." Written on the outside of the letter was the note:

Since the sealing of this letter I met with the Hydropeltis on the banks of the Susquehannah about 2 miles from the town of Wilkesbarre[.] *also on the banks of the river in very shady places at the roots of trees a curious & very elegant species of Arethusa which I have sent you together with all the plants I collected on the trip out finding it impractible to carry them any further*[.] *you may expect them by the receipt of this letter. Just now I saw a fine Fumaria rose color in gardens.*[2026]

The more than thirty-five species he sent contrasted with Pursh's meager findings in the same area. Nuttall's second letter reached Barton 21 October:

Canandaigua, Oct. 10, 1809

Dear Sir

I have little to inform you of excepting my misfortunes & bad success. After seeing the grand cataract of Niagara, the most astonishing production of nature, I proceeded into Canada as far as Ancaster at the head of Lake Ontario & 50 miles from Queenstown. I no sooner reached this place than I fell sick of the bilious fever there prevalent—hardly recovered from this, I was attacked by the aigue, so that I have in all been detained near a month[.] *consequently to my great mortification, I have entirely lost several fine plants, particularly what I collected in the neighbourhood of Lake Erie, and at the Falls; all that still remains of them in my possession are poor dried specimens but even these did not escape, & soon as I was able to examine them, I found them eat*[en] *up by mould. I shall mention a few of these as far as I recollect. An irregular diadelphous plant, trifoliate, & of an offensive smell, the seed-vessel a round pod filled with moderately large roundish seeds of this I collected ripe seeds, growing at Buffaloe on the banks of Erie. In Buffalo-creek, at the town, I met with Valisneria.*

[2026] Archives ANSP, xerox at APS.

Pursh had, and Nuttall continued to watch for, Eel grass, *Vallisneria spiralis*, whose pollination sequence attracted botanists' curiosity. "On the banks of Niagra I met with what I take to be Artemisia pontici [*sic*, *pontica*] or Roman wormwood, shrubby leaves capilliary divided green above–villorus underneath. The Argentina or Silver weed. Hyoscyamus nigra, of which I have seeds." Henbane, *Hyosciamus niger*, naturalized from Europe, a prominent narcotic in contemporary pharmacopeia, had been the subject of Barton's dissertation at Edinburgh for the Harveian prize. He desired seed for his medical garden.

> *At the Falls a fine Hypericum which I take to be the same as the shrubby species I met with in Delaware. A Lysimachia with narrow linnear, & acuminate leaves perennial. The Utricularia cornuta–Pancratium of which I have got both seed & roots–a Cunila, with large flowers–to any other species I have yet seen–low; perennial, emitting small creeping branches with small obovate leaves resembling these of Thymus–the Frasera as I take it–but as it differs from the hints you gave me respecting its appearance so materially I have been much involved in doubt respecting it–the highest I saw scarcely reached 3 feet even where it grows in such abundance on the plains you spoke of. Immediately after crossing Gennessee river, the flower is a fine blew–the plant annual–however I have collected abundance of seed of it.*

Barton's interest in what Nuttall mistook for *Frasera*, "Columbo root," was long-standing. On the verso of his letter Nuttall had added, "I am now convinced that I have not ever seen the Frasera!!" In his *Collections*, ed. 1, part 2, 1804, Barton had written that *Frasera* [Green Gentian] "is furnished with a large Tuberous root, of a yellow color, which promises to be little inferior as a bitter, to the Gentian of the Shops, and for which, I suspect it has sometimes been mistaken." Nuttall continued: "I met with the Hippophae at Niagra & also in other parts of Canada. In Canada I met with what I take to be the Dodecatheon Media [*sic*, *meadia*, Star of Ohio] which some of these doctors take to be the Colombo-root." He distinguished "Hippophae" in 1818 as the genus *Shepherdia*, a shrub "about 6 or 8 feet high," related to the Buffalo berry of the West, and commemorating John Shepherd, his confrere at the Liverpool Botanic Garden.

> *I also collected the Linnea*[2027] *in Canada, & the Narthecium pubescens*[2028] *both in flower & seed the flower of an elegant appearance–white–anthers brown–it resembles the* [Bunchflower] *Melanthium much, the scape was covered with a viscous substance & as much so as the Silene or Catch fly. 38 miles from Canandaigue at Le Roy I met again with that fine species of Arethusa I sent you from Wilkesbarre, & a very curious plant with binate leaves somewhat reniform–divided down to the petiole.*

The "very curious plant" was Barton's *Jeffersonia binata*, Twinleaf, about which Muhlenberg in 1792 had queried William Bartram as to its stamen number,[2029] and which William Hamilton of the "Woodlands" had sought in 1796.[2030] It is now *Jeffersonia diphylla*.

Pursh had missed Beech-drops on his 1807 tour through Onondaga country. Nuttall had closely compared this strange plant with *Orobanche*, and this led to his distinguishing *Epifagus* in his *Genera*. He continued:

2027 [*Linnaea* L., 1753. TROPICOS.]

2028 [IPNI refers the Asphodel, *Narthecium pubens* Michx., to *Tofieldia pubens* Willd. TROPICOS notes that Michaux mentioned Walter's *Melanthium racemosum* in synonymy to *N. pubens*.]

2029 Darlington, *Memorials*, 469.

2030 Darlington, *Memorials*, 578.

> *In the thick Beech woods I passed thro on my return from Queenstown to Batavia, I met with a low succulent, dydynamous plant belonging to the order angiospermia—the seed vessel of the same form as that of the Gerardia*[2031] *terminated by a long bifid style—now in seed not exceeding 4 inches in height—very thickstem wrapped up in imbricate leaves like strobilus, the flowers disposed in a thick spike—now in seed.—growing in vast clusters. I expect it has had the succulent white appearance of the Orobanche & am doubtful whether it is not the O. Virginica but if it is what I have hitherto taken for the O. Virginica called Beech-drops from its only being met with under the shade of the Beech—is a very different plant—but what it is I cannot conjecture—it is of a mixt color—brownish red, & a pale yellow clay color—succulent destitute of all leaves elegantly ramified each branch possessing a loose spike of very inconspicuous flowers of the same spotted color as that of the whole plant. I took it to be Dydynamous. It is hardly possible to say when it is in flower as the appearance a considerable time before & after is the same to a general observer, all the apparent difference is the increased size of the seed vessel which is oblong, pointed & cylindric, full of small seeds—it sometimes grows about ½ a foot high. Its color is nearly that of the colored spatha of the Pothos putoria,*[2032] *it takes only slight hold of the ground, the root is a small round tuber or rather a solid bulb omitting very short hooked radicles, by which it supports itself, not withstanding its superficial hold of the earth—what it is I cant imagine, but I am confident it is not O. Virginica.*

Nuttall's plant may refer to *Epifagus virginiana.*[2033]
Remembering Barton's interest in minerals and coal measure fossils, he continued:

> *I have taken the liberty to send in the same box with a few plants to your care, a collection of fossils, & a few petrifactions, which, perhaps owing to ignorance appeared curious to me.—amongst these there is some mineral productions, what I take to be blende, & some fragments of either some Zinc or lead-ore. Their weight made it impracticable for me to carry them here & I was excessively loaded with them from Queentown in Canandagua. On account of the great length of time necessary to transport things from Canandaigua to Philadelphia, I fear the last plants I sent you must have reached in bad order. Yours respectfully, Thos. Nuttall*[2034]

Pursh's most dramatic "find" 20 July 1807 had been the Hart-tongue fern in "shady woods among loose rocks near Onandagua, on the plantation of J. Geddis, Esq." Nuttall, following instructions, visited the farm of James Geddes and recollected *Phyllitis scolopendrium*[2035] at the same site.

While waiting for the journals of the Lewis and Clark Expedition to the Columbia River, which still were in the hands of Belknap and his co-editor, Barton continued in his ambition to produce a "Flora," although now he had extended its boundary to the whole country. Pursh had grown some of the seed from the western country in M'Mahon's garden. Barton now

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2031 [*Gerardia* L., now *Aureolaria* Raf., False Foxglove, Scrophulariaceae. IPNI.]

2032 [*Pothos putorii* Bartram, 1762, Skunk Cabbage, now *Symplocarpus foetidus* (L.) Salisb. in W. P. C. Barton ex Nutt. 1817. IPNI.]

2033 [*Orobanche virginiana* L. is linked to *Epifagus americanus* Nutt., recognized today as *Conopholis americana* (L.) Wall. f. or American Squawroot. IPNI. ITIS. TROPICOS.]

2034 Archives, ANSP.

2035 [Also recognized now as *Asplenium scolopendrium* L., Hart's Tongue Fern. IPNI. ITIS.]

planned a two-year collecting trip for Nuttall as far northwest as the Beaver River, half-way up Lake Winnipeg in Canada. He was to return by way of the Missouri and the Mississippi rivers to Fort Vincennes on the Wabash, then through either Kentucky or Tennessee to Philadelphia, with a possible stop at Richard Peters Barton's home near Winchester, Virginia.

Barton's inspiration for study of the area had come from his reading of such books in his library as Chastelleux's *Travels in North America*, ed. 2 (London, 1787, 2 vols.), Carver's *Travels*, and particularly Alexander MacKenzie's *Voyage from Montreal* ([Philadelphia,] 1802, 2 vols.). As early as 13 February 1810 he addressed a letter to His Excellency, Esq., Governor of the Indiana Territory, at St. Vincennes, on the Wabash, William Harrison.[2036]

> *Sir,*
>
> *At my own expense and without patronage,–at least without any pecuniary patronage,–I have planned and set on foot an expedition through the north-western parts of our U States, and the adjacent British settlements; an expedition exclusively directed to some of the more important objects of physical science, especially Botany, Zoology, mineralogy. The task of accomplishing this interesting project, I have confided in a young man, a native of England, brought up in a manner under my own eyes and implantings, and distinguished by his love of Science, his integrity, his sobriety, and innocence of character. The gentleman to whom I allude, Mr. Nuttall, has been employed by me to proceed from Philadelphia, from thence to Detroit, Chicago (in the West).*[2037]

The letter continued with notes on natural history. To further facilitate Nuttall's travels northwestward, Barton wrote for a passport to Albert Gallatin, Secretary of State, Washington, D.C.:

> *Mar. 14 1810*
>
> *Sir*
>
> *Mr. Thomas Nuttall, a young man of very fair character, and known to me for several years, is about to explore, under my direction, and at my expense, the country about Detroit, and from there toward the lakes Michigan, Superior, &c. My sole object, and the only object of Mr. Nuttall, is the collecting of plants and other objects of natural history, and also the collecting of information relative to the manner, customs, &c. of the Indians. From the uniform tenor of my pursuits in life, you will hardly infer that any thing political is in view.*
>
> *Mr. Nuttall will be provided by me with the necessary money; but, unfortunately, I know no body in Detroit, or the adjacent country, to whom I could recommend him. It is therefore, my wish, if not inconsistent with the conduct of your station, that Mr. N should be supplied with some kind of general letter, or passport, intimating to traders, &c, that he is in pursuit of objects of science, and requesting that he may not be molested and interrupted in his mission. This is the only patronage which I ask of the government; and I do not pretend to say, what should be the style of the general letter, or passport. My object is fair and honourable, as I am anxious before I publish some extensive works relative to our country, to*

2036 William Henry Harrison (1773–1841). Dorothy B. Goebel in *DAB*.

2037 Barton papers, APS, Barton's copy.

be put in possession of a greater mass of current information, on some important points.

Mr. Nuttall will leave Philadelphia about the 25th of the present month. He will proceed to Pittsburgh, and from thence, by the nearest rout, to Detroit. It is my wish that he should proceed as far as the Lake Winipeck. I am, Sir, with very great respect, [etc.][2038]

Mr. Robert Smith of the State Department, replying for Secretary Gallatin, sent the requested passport for Nuttall, but President James Madison decided he needed a British passport for entry into British Territory. Barton then applied to the British representative in Philadelphia, who objected to Nuttall's having been given an American passport on the grounds that Nuttall was not an American citizen as stated in the passport.[2039] Barton acknowledged to Madison, "I thought it my duty not to conceal the truth; and therefore said he was not." Barton had evidently sent Nuttall's original passport to be renewed, and not receiving an answer, wrote again to Smith, Nuttall already having begun the trip:

Washington, April 29 1810

Sir

I did myself the honour to write to you some time since, respecting the renewal of Mr. Nuttall's passport at the same time, I enclosed the copy already furnished by you.

I shall be thankful for another copy of the passport. The objects of Mr. Nutall, who goes at my expense, are wholly scientific. As I wished him to have all protection, I applied to the U.S. Government for a passport. For the same reason, I applied to Mr. [Rand?], *hoping to have received from him a similar protection: but that gentleman objected, on the ground that Mr. Nuttall is called 'a citizen of the U. States,' which he is not. The traveller is now on his way to Detroit, without the advantage of any passport; the only thing I asked of the American government; as all the expenses of the expedition, which can hardly fail to be beneficial to science, are defrayed by myself.—I am well known to the President, Mr. Gallatin, &c., and I assure you again, that Mr. Nuttall is a young man of great innocence of character. I hope, therefore, that I shall be so fortunate as to receive from you, a new passport, framed in such a manner as you think proper, omitting, however, any expression relative to Mr. Nuttall's citizenship. I have the honor to be, Sir* [etc.][2040]

[On the letter Barton noted for his own record] *N.B. I put the letter into the Post-Office, Tuesday noon, between 3 & 4 o'clock.*

Meanwhile these two enthusiasts planned together, Barton firing the enthusiasm of his young assistant although he had only a smattering of information on the Canadian part of the trip. On 7 April 1810 he and Nuttall had signed an agreement:

You are to keep an exact Journal of your daily travels, and of the observations which you make. This journal, and all the observations you may make, are to be my exclusive property; and no part of them are to be communicated, without my consent, to any person. Should I ever publish the journal, I hereby promise and bind myself to make a public

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2038 Barton papers, APS, Barton's copy.

2039 Richard G. Beidleman, "Some biographical sidelights on Thomas Nuttall," *Proc. Amer. Philos. Soc.* 104 (1960): 87-88.

2040 Barton papers, APS, Barton's copy.

acknowledgement, that the journey was performed by you, and to give you full credit for what services you may have rendered to me. You will be entitled to a part of all the specimens of animals, vegetables, minerals, Indian curiosities, etc., which you may collect; but these you are not to dispose of without my consent, as they might otherwise fall into the hands of persons who would use them to my disadvantage.

[signed] *Benjamin Smith Barton*

I agree to the above terms. [Signed] *Thomas Nuttall."*

[and]

I agree to pay all the expenses of the journey, from the time of your setting out to the time of your return. You are to keep an exact account of all the expenditures. Besides paying the expenses of the journey, I hereby agree to give you, on your return to Philadelphia, or within forty days after your return, at the rate of Eight dollars the month, lawful money of the United States.

[signed] *Benjamin Smith Barton.*

I agree to the above terms. [Signed] *Thomas Nuttall.*

Barton then gave Nuttall specific directions. He was to revisit sites Barton remembered from his westward journey of 1785: Ligonier and the Beaver River area of western Pennsylvania.

You are to proceed from Philadelphia to Pittsburgh, by way of Lancaster, Chambersburgh, Bedford, etc. I wish you to make a short stay at Bedford and its vicinity, examining the vegetables, &c., there. You will, I think, find something worthy of attention, in the way of the impressions of organized bodies, &c. Look for Elk-nut[2041] *and Streptopus* [Twisted Stalk], *especially about Ligonier.—I do not wish you to make much stay at Pittsburgh: three or four days will be sufficient. Should you be delayed longer by any circumstances, an excursion up the Alleghaney River, may be profitable. Before leaving Pitt. put your communications, etc. into the hands of Mr. Geo. Stevenson.—From Pitt. proceed by the route which shall be recommended to you, to Sandusky. I wish you, if not inconvenient, to go down the Ohio to the mouth of Big Beaver, where you will find Frasera, of which I wish a few pounds of good roots; and from thence to the Mahoning-Salt-Sprs. on a western branch of Beaver. These springs will be worth examining for their vegetable and other products. Look for muriatic plants, such as Salicornia* [Glasswort, Pickleweed], *Glaux, Triglochin* [Arrowgrass], *&c.; and for a fine blue ea*[r]*th, which is said to be found about the springs. Make inquiries about the strength of the salt-water, the quantity of salt made, &c. Here also, without going there, you will learn something about the salt works at Yellow Creek. Why is this creek so called?—At the Mahoning Salt-works, inquire if Mammoth or other similar bones have not been found there.—From this, proceed by the nearest way, to Sandusky, where I wish you to stay at least so long as to acquire five good specimens of the Wyandot language. Here, also, you may expect to find some curious plants; and dont omit to make inquiries about the disease of Goitre; its comparative frequency in males and females; whether it is often connected with fatuity, &c. Examine with much attention, the*

2041 *Pyrularia pubera* Michx., Buffalo nut, Elk nut. Albert Brown Lyons, *Plant Names, Scientific and Popular* (Detroit, 1900), 312.

species of Aesculus[2042] *at Sandusky; and look for the large Nelumbium. Perhaps it is distinct from the kind near Philadelphia. What do the Wyandots call this Nelumbium*[2043]*? I need not say, that ripe seed of it, in the fall, will be acceptable.—Numbers of Indians here. See the article 'Indians' in the queries, p. 3, 4, &c. From Sandusky, proceed to Detroit, from whence I expect to hear very minutely from you. You will, necessarily, be delayed here some time: but if the weather be favorable, I advise you to proceed, without much delay, to explore the country north or west, as may be represented most advantageous to you. Upon the whole, perhaps, it will be best to proceed westward, towards Chicago, on Michigan, where please to deliver your letter to Mr. Irvin, and make with him all the necessary arrangements for the safe keeping &c. of your specimens, &c., &c. Here, as well at Detroit, be sure to inquire for Mr. Dixon, to whom I have given you a letter.*

From Chicago, unless you should see substantial reasons to deter you from this rout, take your course, nearly northward, along the lake to lat. 44 degrees. Here I wish you to turn to the westward, towards and among the Winnebagoes, of whose language, customs, & c., I am greatly desirous to receive information. You will, doubtless, find many curious plants here. I presume a residence of fifteen or twenty days, among and near to the Winnebagoes, will be highly profitable. Of these Indians, we know very little, except from Capt. Carver. Their traditions. Did they come from the south or south-west? As soon as possible, send me a good specimen of their language.

From the castle of the Winnebagoes, proceed to the Menominies castle, where your delay need not be great. Thence, after exploring a part of the country about Green-Bay, take your course, if this appear convenient, in a direction nearly north-west, along the Meno[mi]nies-River, to Lake Superior, about the deep sinus ma[r]ked Pt. Keewena in McKenzie's map. Now pursue the southern shore of Superior, by land or by water, as shall be most advisable, to Fon-du-Lac. From this, with such digressions as may seem proper, take your rout along the lake, north-east, to the 'Grand Portage,' beyond which to the east or north I do not wish you to proceed, unless to examine some of the islands in the lake.

From the Grand-Portage, or its vicinity, take nearly a north west course, by the lake of the woods, to Lake Winnipic, provided you shall find no obstacles from the British traders, which considering the useful and innocent nature of your business, I do not expect.—These two lake[s], especially Winnipic, I wish you to explore with great and minute attention, for plants, animals, minerals, &c. Obtain a list of the fish of these lakes, with their common names. The meaning of the word Winnipic, and the true Indian spelling. About these lakes, you will, doubtless, find much to interest you; and, therefore, I do not pre[t]end to prescribe the term of your delay. I presume you will find it important to take excursions from Winnipic, both eastward and westward, especially perhaps to acquire some information about the course, height, nature, &c., of the range of mountains,[2044] *laid down by McKenzie, along Poplar River. What Poplar grows here?*

2042 *Aesculus glabra* Willd., Graustein, "Nuttall's Travels," 47, 62.

2043 [*Nelumbium* Jussieu, now *Nelumbo* Adanson, Lotus. IPNI. ITIS.]

2044 The Eagle Hills west of Winnipeg.

After leaving Winnipic, endeavour to proceed, in a westerly direction to about 55 degrees, on Beaver-River, beyond which, to the north or to the west, I do not wish you to proceed, unless you shall find, from correct information, strong inducements to do so.—You are now to shape your course, in a southeast direction, perhaps to the places marked Manchester-House and Hudson-House, so as to fall upon the waters of the Missouri-River, perhaps about the Pawnee-village, laid down in the map. You are then to take your course eastwardly, so as to reach the main branch of the Mississippi, down which you are to proceed to the Falls of St. Anthony; and from thence, in the course that shall appear most interesting to you, to about the mouth of the Illinois; and from thence to Ft. Vincennes, on the Wabash, where I have no doubt, that you will be kindly received by Governor Hamilton, and others.—I now leave you to pursue the course you shall now think proper, through Kentucky (and Tennessee) and Virginia, to Philadelphia. In Virginia, however, I wish you may make it convenient to visit (with a proper guide) the Peaks of Otter and the Salt Pond Mountain; and my brother Richard P. Barton, who resides in Frederik-county, at the distance of a very few miles from Winchester. He will receive you with hospitality; and if necessary, will assist you with some money, on my account.

In the preceding notes, I have not said where you are to pass the winter season. On this subject, you will endeavour to procure the best information, both for your own convenience, and to my advantage. Probably you may find a good lodging in some of the British factories. — Endeavor to begin your return in the spring, either in April or May, so as to examine, to the greatest advantage, the early plants of the mountains, plains, &c.

In supplying yourself with an Indian guide, be cautious to obtain the best information, as to the character for integrity, sobriety, &c. of the guide. It is likely that you will stand in need of a guide from Detroit to Chicago. At all events, I presume you will require one to conduct you from Chicago to the Winnebagoes, and from thence to Superior. I have no doubt that Mr. Clay's letter to Mr. Irvin will be of much use to you. Ask his advice; but always remember, that, next to your personal safety, science, and not mere conveniency in travelling, is the great object of the journey. In pursuit of curious or important objects, it will often be necessary to court difficulties, in travelling. Benjamin Smith Barton, Philadelphia, exact copy. B.S.B. April 8th, 1810.

Barton equipped his explorer with articles duly inventoried:

LIST OF ARTICLES BELONGING TO ME, WHICH MR. TH. NUTTALL HAS IN HIS POSSESSION: VIZ.

1. *One thermometer, in a case.*
2. *One steel-pen.*
3. *Hoffman's Flora Germanica, one volume.*[2045]
4. *Five blank books.*
5. *One double-barrel Gun, with cover, &c.*
6. *One Pistol, with key, &c.*
7. *One Dirk, in case.*

2045 Ewan, "Barton's library," [315], illustration of title-page.

There is also the following bill, in Nuttall's handwriting:

1 lb. gunpowder $1.00
a –powder horn 1.50
a –shot belt.87½.87½
a –pair of small scales 1.25
4 quires of paper 1.25
4.87
- 12½
4.99½

[Barton wrote] *Paid 5 dollars, in full, of the above, Mr. Nuttall–April 12th.*[2046]

And so plans proceeded. Barton wrote glowingly about 26 April to Langsdorf in St. Petersburg:

> *I have, at my own expense, without any other aid, planned and fitted out an expedition of natural history, &c. & c, which will, I flatter myself, prove important to science. The task is chiefly confided in one person, who began his tour a few days ago, and whose return I do not look for in less than fifteen or sixteen months. He proceeds to Pittsburgh in Pennsylvania, and from this, in a direction chiefly north-westward, to the lakes Erie, Michigan, Superior, Winnipic, &c, as far north as latitude 55 degrees and about longitude* [blank] *from Greenwich–He is then to shape his course south and southeastward to the waters of the Missouri and Mississippi, and down the latter river to about latitude 4–, from thence through the states of Ohio, Tennessee, Virginia, to Philadelphia. The great object of this expedition is the collection of specimens, facts, &c. for my botanical and zoological works, and also for an extensive work on the languages, &c, of the Indian nations.*[2047]

For Nuttall to explore the Great Lakes region and, if possible, the Red and Beaver Rivers of the North, would complement the knowledge of faunas, floras, Indian tribes, and topography made known by Lewis and Clark. Nuttall's observations and discoveries would, Barton expected, find their way into his "American Botany." Nuttall's travels into the old Northwest of 1810 introduced him to the brave new world where, as he wrote in retrospect, the "privations [of a naturalist] are cheaply purchased if he may but roam the wild domain of primeval nature." Nuttall's biographer, Jeanette Graustein, saw him as heaven-sent for Barton's purposes. "For a lone youth, completely ignorant of frontier conditions and woodcraft, unable to swim or shoot, the proposed journey through the vaguely known Territories to 55 degrees N. on the Beaver River of Lake Winnipeg was utterly preposterous."

"Preposterous" perhaps for Barton to wager on Nuttall's success. Barton noted "observing in him an ardent attachment to, and some knowledge of botany, I omitted no opportunity of fostering his zeal, and of endeavouring to extend his knowledge." Was Barton completely unaware of the dangers Nuttall was to face? He had himself assisted his uncle, David Rittenhouse, in the wilds of western Pennsylvania in his youth, and perhaps saw little difference in the terrain to be covered. Of details of this western terrain little had been written. Nuttall's first letter Barton received 1 May:

2046 Barton papers, APS.
2047 Barton papers, APS, Barton's copy.

Pittsburgh, April 22, 1810

Honrd. Sir,

I left Phila-ia at 5 in the morning in the stage. In the evening we came to Lancaster. On Friday at breakfast-time we reached Carlisle. I called upon Mr. McKoskey from whom I received a verbal message, but no letter. About noon we reached Elisabeth-town; near here in the stone that was broken up to repair the road, I saw considerable quantities of the oar of some white metals, which I think somewhat resembles antimony? the specimens I picked up, I shall send to you. In the evening we reached Harrisburgh on the Susquehannah, we then crossed the river & remained till morning at a tavern on the banks of the river, on the calcareous rocks of its bank, I found the Sedum ternatum, & Dodocatheon Meadia, both nearly in flower; also the Asplenium rhizophillum [*sic*, *rhizophyllum*, now *Camptosorus rhizophyllus*, Walking Fern] *& 3 other species of Asplenium. On Saturday evening we reached Chambersburg. On Sunday we crossed a high ridge; while passing it I had a bit of the ague, attended with nausea, tho thus situated I kept my eye almost constantly on the mountain, but without being able to observe any thing uncommon, vegetation was so backward. On descending the mountain the road was so intollerably rough I got out sick as I was & walked about a mile & a half to McConnell's town where we remained for the evening. On Monday evening we reached Bedford, I took a walk to the chalybeate spring in this neighborhood. I drank pretty freely of its waters, which I am confident were of essential service to me, having since had no return of the ague, which I expected on Tuesday, having neglected to take more than one dose of Fowler's solution.*[2048] *Vegetation being here so backward I determined to proceed without further delay as I expected it would but be time and labour lost to search for the plants you mentioned yet. Of organized impressions on stone I could learn nothing here, but 2 miles East of Chambersburgh, I saw what I took to be the impression of some species of conferva.*[2049] *On Tuesday about noon, we crossed the Alleghany, a little snow still remained on its top. In the evening we reached Somerset. On Wednesday we crossed the Laurel ridge, but still too early for the interesting vegetables you mentioned. This evening we reached Greensburg. 7 miles from Greensburgh there are appearances of coal, after which its appearance is common to Pittsburg. 12 miles from Pittsburg on Turtle-Creek, I found a species of Trillium nearly in flower, I believe it was the Sessile, with it grew the Claytonia* [Spring Beauty] *now in flower, Dentaria bulbifera*[2050] *& Erythronium of these 2 last I saw no flower, & a fine umbelliferous plant which I took to be a species of Bunium,*[2051] *it has precisely the Chesnut bulb of the species growing in England, but it may belong to some other genus, it is low & procumbent, flowers white, anthers of a fine brown-red, the Gleditsia* [Honey Locust] *is here in abundance, its trunk is covered with branching spines. This evening Thursday the 19th we arrived in Pittsburg. A French Gentleman, a Mr. Lisa came in the stage to Pittsburg on his way to St. Louis on the Mississippi. he is one of a Fur-trading company to the heads of the Missouri; he was personally acquainted with the late Gov.*

2048 An aquaeous solution of potassium arsenate.

2049 Algae or other water plants.

2050 [Now *Cardamine bulbosa* Britton, Sterns & Poggenb., Bulbous Bittercrest. ITIS.]

2051 Resembling the European *Bunium bulbocastanum* L., the Great Pignut, but possibly a species of the Sweetroot *Osmorhiza*.

Lewis of whose character he has nothing very favourable to relate; he says, he was fond of exaggerating every thing relative to his expedition, & that he was a very head-strong, & in many instances an imprudent man.[2052] *Mr. Lesa says, that on the Osage-river are found large bones, that the prairies abound with small dogs of a red colour which burrow under ground, & also a larger species between 2 & 3 feet long of a grey colour, having its fore-feet not much more than half the length of the hind ones armed with broad sharp-pointed nails whereby it can burrow into the earth in a few minutes, & its walk is very slow & awkward. He calls (Prairou), he mentions what is called the mountain goat considerably resembling the common one, a kind of mountain sheep covered with long hair, having the horns deflected from the head towards the back, also another distinct species of sheep call Big-horn,*[2053] *he says, they are called so from the circumstance of their large horns advancing down the sides of the face, till they meet at the mouth & prevent the animal from eating, he says, by desire of Capt. Lewis he endeavoured to raise some young ones, but did not succeed for want of milk, but having obtained 2 or 3 tame goats he hoped to be able in future to raise 2 or 3 for curiosity. He also presented Captain Lewis with a very singular skin which he had obtained from the Crow-nation which the Indians in their language called woman-otter,*[2054] *because they said it pursued their women, as is said of the monkeys on the coast of Africa. The skin was 3 ft. long & 2 broad, covered with hair nearly as coarse as bristles. He also says, there are magpies*[2055] *pretty common.*

Near Pittsburgh on a hill of coal which I went up, to see the allum-spring, I found the Aconitum [Monkshood] *but not yet in flower also the Sedum ternatum, Fumaria cucularia* [*sic*, cucullaria], *Dentaria bulbifera, these 2 last were in flower, and the Sedum nearly, I saw also a Trillium which I supposed to be the umbrosum caulophyllum, & a species of Silene, which I believe will have white flowers; the Cercis* [redbud] *was nearly in flower, in wet meadows below the hill I once more saw the Caltha palustris* [Marsh Marigold]. *Vegetation is much more forward on this side of the mountain. I was received with civility & attention by Dr. Stevenson; He dissuaded me from going to Beaver-Creek, he says the salt springs are very inconsiderable, & that without some other more interesting object it would be a waste of time. Respecting the salt-rocks on Yellow-creek, he could give me no farther information that he had heard of their existence on that creek, he thinks the name of that creek arises from no very peculiar circumstance respecting it, he advises me to pass on to Le Boeuf on the Alleghany. An opportunity now offers to send my trunk up the river to this place, & I shall travel on foot, it is 220 miles to Le Boef. The Allum-spring above mentioned in this neighborhood is of little consequence, I did not find it. Yours, &c, &c. T. Nuttall*[2056]

2052 Jackson, *Lewis and Clark*, 180, gives Lewis's opinion of Manuel Lisa and his partner: "great scoundrels." Irving B. Richman in *DAB*.

2053 [Bighorn Sheep, *Ovis canadensis* Shaw, 1804. MSW.]

2054 [The Northern River Otter in America is *Lontra canadensis* Schreber, 1777. MSW.]

2055 The American magpies include the Black-billed *Pica hudsonia*, and Yellow-billed, *Pica nuttalli*. The Black-billed Magpie was described by Sabine in 1823, with a live bird shipped back by Lewis and Clark (1805) from Fort Mandad, South Dakota, to Jefferson. AOU. AUD.

2056 Barton papers, APS.

Nuttall's journal account complements his letter and reflects the contrasts of his English experiences with his western trip. His trenchant meeting with "Mr. Lesa," that is Manuel Lisa (1772–1820) of St. Louis, a Spanish fur-trader of the Missouri Fur Company, proved to be the prologue to Nuttall's association with the party with which he reached as far as the Mandan post. Lisa's disparagement of Meriwether Lewis carries particular interest, since Lewis's brother, Reuben, in charge of the Company's Mandan post, was one of Lisa's partners.

"Small dogs of a red colour" were thirteen-lined ground squirrels,[2057] and "larger species," black-tailed prairie dog or *prairou.*[2058] "Mountain sheep" or "bighorn" were *Ovis canadensis audubomi*, the last mentioned by Barton in his letter to Jefferson 17 November 1805, "I long to see the large horns of a species of sheep. I doubt not, this will prove to be the Taye of California, described and figured by Venegas, in 1757."[2059] The myth that the Bighorn was unable to eat because of the growth of its horns recalls the tale of the babirousa, the Wild hog of Malaysia, whose recurving tusks pierce the snout.

The black-tailed magpie, a holarctic bird, was first made known from North America by the Lewis and Clark Expedition. Nuttall's journal, faithfully reproduced and annotated by Graustein, opens 12 April 1810, and tells of "foetid Pothos" –the skunk cabbage[2060]–coming into flower, his noting several birds, "chearful lark," wild pigeon, and "twittering swallow." In the days that followed he observed that "jist-stone continued to Harrisburg," and he caught a species of stone-fly–a true naturalist's varied notebook of curiosities. At McConnells-town he wrote that he had arrived at Pittsburgh 19 April after a journey made miserable by frequent attacks of malaria "bro't on I had reason to believe by fatigue, the roads being over mountains, & full of large stones." Detail in the journal decreases, its last note about New Madrid on the Mississippi. The journal had contained the following note at its head:

> *If by any unforeseen accident this book should fall into the hands of a stranger, the person whoever he may be will be amply rewarded for his assistance in sending this book to Doctor Benjamin Smith Barton, Chestnut Street, Philadelphia.*[2061]

Although Nuttall was now on his way, Barton continued his efforts to gain the necessary papers for his entrance into British Territory. On the 20th of May he wrote a four-page letter to President Madison explaining again his purposes for supporting Nuttall's expedition, and describing his integrity, felicity, and innocence of character. "I have no doubt, should his life be spared, that he will add much to our knowledge of the geography and natural history, &c of the countries through which he is directed to pass." This letter was barely on its way when a letter of 17 May from Richard Forest of the State Department arrived telling of the impossibility of complying with the request to furnish a passport, since Nuttall was not an American citizen. Barton wrote hurriedly on 21 May to Madison telling him that Nuttall desired to become an American citizen, but that he had not yet resided long enough in the country. He would like "some kind of letter of facility" for Nuttall's protection since Nuttall's object was only the collection of scientific specimens. "–as to myself, though less known to you than to the late President [Jefferson], I will state that I am sufficiently known to merit a

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2057 [*Spermophilus tridecemlineatus* Mitchill, 1821. Ground squirrels were previously described as *Citellus* Oken, 1816, even earlier as *Mus citellus* L., 1766. MSW.]

2058 Barton in *PMPJ* 2 (1805) Pt. 1: 159 suggested it was *Arctomys citellus* of Pallas when he examined Lewis's specimen. [The Black-tailed Prairie Dog refers to *Cynomys ludovicianus*, Ord, 1815. MSW.]

2059 Quoted in Jackson, *Lewis and Clark*, 271.

2060 [*Pothos foetidus* Aiton, Skunk Cabbage, now recognized as *Symplocarpus foetidus* (L.) Salisb. in W. P. C. Barton ex Nutt., 1817. IPNI. ITIS.]

2061 Graustein, "Nuttall's Travels," [21]. The journal follows, [21]–72.

portion of your confidence...At all events I shall again apply, without hope of its being received in time, to Mr. Jackson, for a passport through the British settlements."[2062]

Nuttall makes no mention of ever having received a passport, perhaps because if it had been sent to Chicago: Nuttall did not reach that settlement. Barton wrote shortly before his death that he had obtained "a special passport from the president of the United States, Mr. Madison, and with whatever else I deemed necessary, together with a considerable collection of ms. queries and memoranda."[2063] In a memorandum addressed to Barton, perhaps by John Vaughan, 1 April 1811, he told Barton that had he or J. J. Astor been informed, Nuttall could have been given passage across the continent with Northwest Company agents.[2064] This would have protected him in Canada.

Nuttall carried with him an introduction to Barton's friend of like interests. Its description of the mission was similar to that given Madison except that he substituted "sobriety" for "felicity," and he had included some notes on fossil bones, though here he kept a copy only of his introduction of Nuttall. Addressed to "Augustus B. Woodward Esq. Chief Justice of the Territory of Michigan," at Detroit, the letter reads:

> *April 8 1810*
>
> *Dear Sir*
>
> *This will be handed to you by Mr. Thomas Nuttall, a young man of very fair character, and of great enterprise, who intends to explore the country about Michigan, &c. in search of plants, and other subjects of natural history. You will especially oblige me by showing him any civilities; in giving him any information concerning the best means of conveying his collections to Philadelphia, in safety, at my expense; and also in suggesting to him any hints for the better prosecution of his journey to the north-west, should he determine to visit these regions. He means to go as far as lake Winnipeck, if not farther. He has a passport from our government, and I hope to attain one from the British. Mr. Nuttall will inform you, without reserve, what rout I wish him to pursue. I am, Dear Sir with very great esteem, Your friend,*
>
> *Philadelphia, Benjamin S. Barton.*
> *exact copy.*[2065]

By ship Nuttall paused at Michilmacinac where he met Robert Dickson (whom Barton referred to as Dixon), Indian trader, for whom he had a letter of introduction. In answer Dickson suggested that the season was too far advanced for Nuttall to set out for Winnipeg, and suggested how Barton could expedite Nuttall's travels into British territory in the spring of 1811 by applying to Montreal. Addressed to Dr. B. Smith Barton, Philadelphia, from Cahokie, 23 Oct. the letter reads:

> *Prairie du Chien, Sept. 9, 1810*
>
> *Sir*
>
> *I had the honor of receiving your letter by Mr. Nuttall a few days previous to my leaving Michilimacinac he accompanied me as far as Green-Bay, when I left him with one of my Friends, as there were objects*

2062 Richard G. Beidleman, "Some biographical sidelights on Thomas Nuttall," *Proc. Amer. Philos. Soc.* 104 (1960): 86–100; quotations from 87, fn, citing "Papers of Madison," *Bull. Bur. Libr. Dept. State* 4(1894): 154 and 229.

2063 Barton papers, APS.

2064 Barton papers, APS. W. P. C. Barton wrote that his uncle had provided Nuttall "with a special passport from the president of the United States, Mr. Madison." Barton may not have known that the passport did not reach Nuttall (Barton, *Elements* (1836), 26, fn.).

2065 Barton papers, APS.

in that part of the Country worthy of his investigation He will come here in a fortnight from this when every attention shall be paid him–I find him a Modest & very well informed Man, You may depend on every attention in my power, as well as respecting information to be obtained in his Scientific Researches & making his situation as Comfortable as the County will admit of. His intentions on his arrival at Michilmacinac was to proceed to the North-West as far as Lake Ounipague, But the Season for such an undertaking was too far advanced nor was he provided with the proper means of going into that Country in the Character that he certainly merits. I have directed him, to advise you, where to apply for the necessary introductions which you will have no difficulty in obtaining, he has wrote to you fully on this head.–You will please forward the letters necessary for him, from Montreal by the first NorthWest Canoes that leave that place next Spring, that they may find Mr Nuttall at the British establishment at Fort Joseph, in Lake Huron about the middle of May–I shall some time hence, have again the pleasure of aiding you–I remain Sir with much Esteem Your Obed. & very Hbl Servant

[Barton:] *Received, R. Dickson*
November 19 1 p m.!![2066]

While at Michilmacinac, Nuttall had met Wilson Price Hunt[2067] of the Pacific Fur Trading Company, who was outfitting an expedition for John Jacob Astor that would follow the route of Lewis and Clark up the Missouri and on to the Columbia. Hunt invited Nuttall to accompany the party, just as when they reached St. Louis he invited another Englishman, John Bradbury, who was collecting for the Liverpool Botanic Garden at $100 a year. Since he could not proceed with the trip into Canada without delay, Nuttall agreed. There would be added strength in numbers for Hunt's party and the advantages of travelling with a well-outfitted group. Wintering in St. Louis, he and Bradbury had several botanical and geological trips together in the area, but on the westward trip paid little heed one to the other. Bradbury recorded that he found Nuttall naïve and narrow. Naïve in answer to Barton's terms for guarding new discoveries? Nuttall accompanied the party as far as the Mandan villages, but sent Barton slight record of his journey.

Shortly before his death Barton wrote:

He proceeded to the Arikanee [Arikaree] *towns; from thence to the territory of the Mandan Indians, in the boat of a Spanish gentleman* [Manuel Lisa]*; and in the same vessel descended the Missouri to St. Louis, near the confluence of this great river with Mississippi, in the autumn of 1811.*

In the latter end of the year 1811, Mr. Nuttall returned to England by way of New Orleans. Previously to his departure he transmitted to me a number of dried specimens and seeds which he had collected...At the same time he sent me a ms. book, in which he had given pretty full descriptions of...Bartonia superba and B. polypetala.[2068, 2069]

2066 Barton papers, APS. On Robert Dickson (c. 1765–1823), Grace L. Nute in *DAB*.

2067 Wilson Price Hunt (1782?–1842), W. J. Ghent in *DAB*.

2068 Barton papers, APS.

2069 [Not Gentianaceae but Loasaceae. Pursh proceeded to publish his *Bartonia decapetala* in 1812 in *Bot. Mag.* 36: t. 1487. This *Bartonia* in Loasaceae would later refer to *Mentzelia* as *M. decapetala* (Pursh) Urban & Gilg in Engler & Prantl, *Nat. Pflanzenfam.* iii, 6a, 111 in 1894, Evening Starlily, Gumbo Lily. ITIS. TROPICOS.]

Nuttall had visited Natchez in early December 1811 en route to New Orleans. Did he visit Dr. Samuel Brown, the best informed naturalist in town? On arrival in New Orleans Nuttall learned of a ship about to leave for Liverpool, and he embarked. Growing tensions between the United States and England and news from home may have influenced his return to Liverpool.

By Nuttall's own admission the forty-seven specimens, as reviewed by Stuckey,[2070] taken for Barton on his 1810–1811 expedition, were mostly lost by some undisclosed accident(s), and Nuttall substituted specimens taken on later trips to represent the new species he published in his *Genera*, these new specimens from different localities. Barton had caparisoned Nuttall with an introduction to the known treasures of North American botany, books and specimens for an ambitious project, with funds, though limited, and with letters of introduction to open doors along the way. Under Barton he served his apprenticeship as a dedicated field naturalist and botanical explorer. Barton wrote that Nuttall's "zeal and services" contributed essentially to extend our knowledge of the northwestern and western flora of North America, "and to whom the work of Frederick Pursh is under infinite obligations."

Nuttall proposed forty-five new genera in his *Genera*. Nearly a fourth, thirteen, carried commemorative names: *Bartonia*, *Collinsia*, and *Maclura* for his patrons; *Enslenia*, *Lyonia*, and *Balduin* for fellow field botanists whom he knew in Philadelphia; *Mahonia* and *Shepherdia* for gardeners; *Crantzia* and *Stanleya* for a revered botanist and an ornithologist; *Windsoria*[2071] and *Simmondsia* for boyhood Yorkshire companions, and *Wisteria*[2072] for the Philadelphia physician he most admired. On publication he made a citation for each of these memorials with the notable exception of Barton. In that dedication Nuttall spent his wrath on Pursh, who had pre-empted his acknowledgement. Nuttall sidestepped any word of appreciation, in contrast with Pursh's mildly expressed gratitude. As Pennell points out, "Barton's encouragement and assistance are at the foundation of Nuttall's *Genera*, just as they are of Pursh's *Flora*."[2073]

Nuttall summed up the problem of the early United States and one reason for Barton's failure in his attempt to produce a "Flora" of this young country. He wrote to A. P. de Candolle from Cambridge, Massachusetts, 14 August 1825:

> *The Americans have not sufficient enthusiasm to be naturalists, and the government sanctions nothing like partial patronage however important to the better knowledge of their country. To possess a fertile waste, and then to leave it such, till visited by accident is the peculiar and cold policy of this republic. Hence, indeed, so many partial efforts to study Natural History in this country, but rarely progress beyond its rudiments, because there is no incentive to its pursuit, neither profit, honour nor support await the disciple of Nature.*[2074]

Yet by 1836 Nuttall had visited what were to become thirty-eight states of the Union, more by far than any other botanist of the half century.

2070 Stuckey, "The 'lost plants' of Thomas Nuttall's 1810 expedition into the Old Northwest," *Michigan Botanist* (1967) 6: 81–94. MacPhail, *Nuttall*, 1, lists "A catalogue of new and interesting plants, collected in Upper Louisiana, and principally on the River Missourie, North America, for sale at Messrs. Fraser's Nursery for curious American plants, Sloane Square, King's Road, Chelsea, London. 1813," a list of 89 seeds of plants collected by Nuttall. Nuttall complained later that he had never received compensation for the seeds.

2071 [This grass later referred to *Triodia* R. Br. IPNI.]

2072 [The familiar American species, *Wisteria frutescens* (L.) Poir., which Linnaeus first described as the legume *Glycine frutescens*. IPNI.]

2073 Pennell, "Nuttall," 3, 81–94.

2074 Archives, Conservatoire et Jardin Botaniques, Genève.

Lewis and Clark Expedition

Less than seven months after the ratification of the Louisiana Purchase, Captain Meriwether Lewis (1774–1809), Jefferson's home neighbor and private secretary, and William Clark (1770–1838), soldier, brother of George Rogers Clark, set out from the town of St. Charles on the Missouri River for the Pacific.[2075] President Jefferson had written to Barton on 27 February 1803 that "it was impossible to find a character who to a compleat science in botany, natural history, mineralogy & astronomy, joined the firmness of constitution and character, prudence, habits adapted to the woods, & a familiarity with the Indian manners & character, requisite for the undertaking. All the latter qualifications Capt. Lewis has."[2076] Jefferson, the fillip of our first important government-sponsored scientific expedition, was eager to establish our national leadership in this enterprise by having all topics of natural history recorded. The mission's purpose, he wrote Barton, was to be kept in strict confidence, "to have the Missouri explored, and whatever river, heading with that, runs into the western ocean. Congress, in some secret proceedings, have yielded to a proposition I made them permitting me to have it done." Though he did not mention it in his letter, he was concerned with British expansion southward along the Pacific Coast.[2077]

To offset Lewis's scientific shortcomings Jefferson arranged for three members of the American Philosophical Society, all three physicians, to instruct Lewis: Doctors Rush and Wistar principally in medical matters, and Barton in general natural history and "Indian history." Barton was requested to favor Lewis with any written and verbal communications "which you may be so good as to make to him. I make no apology for this trouble, because I know that the same wish to promote science which has induced me to bring forward this proposition, will induce you to aid in promoting it. Accept assurances of my friendly esteem and high respect."[2078]

Sessions took place in Barton's library, and Lewis was an auditor in Barton's classes and on botanical excursions to Bartrams' garden and to Hamilton's "Woodlands." There were visits to Peale's Museum to study live animals or exhibits on the second floor of Independence Hall, where hung framed catalogs that enumerated the classification following Linnaeus in his *Systema Naturae*, and where Peale had improvised habitat displays. In its peak years, somewhat after Lewis's time, and including his specimens, there were said to be 250 mounted animals, 1800 birds, 650 fishes, and 250 paintings of American Indians.[2079] The two volumes of John Miller on Linnaeus's classification and botanical terms[2080] and Richard Kerwin's *Elements of Mineralogy* (London, 1784; ed. 2, 1794) appear in the list of requirements needed for the expedition.[2081] Lewis purchased a copy of Barton's *Elements*, and Barton loaned him a copy of Du Pratz, *The History of Louisiana* (London, 1774), which reached the Columbia and returned safely.

Before he set out for the West, Lewis was introduced in St. Louis to "one of the most outstanding endemic genera of the southern United States," the Osage orange (*Maclura pomifera*. Known to the Ozark and Arkansas Indians, the wood of Bois d'arc was prized for hunting bows. Lewis wrote Jefferson 26 March 1804, "I obtained the cuttings, now sent you, from the garden of Mr. Peter Chouteau, who resided the greater portion of his time for many

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2075 For inception of plans for an expedition to the Pacific see Jackson, *Lewis and Clark*, particularly Appendix I. A paperback, three volume edition, with a map, of Elliott Coues, ed., *The History of the Lewis and Clark Expedition* (New York, n.d. ca. 1988, 4 vols. in 3) has detail.

2076 Barton papers, APS.

2077 Lipscomb & Berg, *Jefferson*, 10: 316–367.

2078 Barton papers, APS; Jackson, *Lewis and Clark*, 16–17.

2079 Sellers, *Peale*, 2: 245.

2080 John Miller, *An Illustration of the Sexual System of Linnaeus* (London, 1779, 1789, 2 vols.).

2081 Jackson, *Lewis and Clark*, 69–99.

years with the Osage nation."[2082] Pierre Chouteau and his brother Auguste, who had profited from exclusive trading rights with the Osage Indians since 1794, knew the Osage orange well, and Lewis described for Jefferson "perhaps a nondescript production." There is no evidence that Jefferson ever mentioned the novelty to Barton, although he sent cuttings to William Hamilton in 1808. Pursh saw only "imperfect specimens", describing it in some detail in his preface but providing no name.[2083] Peter Custis in 1806 encountered the Osage orange "growing within a mile of Nachitoches," Louisiana, although the tree was out of flower and he therefore was unable to classify it in his Linnaean source. He predicted that "it is probably a new Genus." Though known at least to western visitors for more than two decades, it was not botanically named until 1817 by Rafinesque [as *Ioxylon pomiferum* within the Mulberry family Moraceae]. The following year Nuttall adequately described the genus *Maclura*.

The expedition left St. Louis 21 May 1804 and spent the winter of 1805–1806 at the mouth of the Columbia River. It had lost specimens by the capsizing of a canoe. The expected ship with supplies for the return journey did not arrive, and so the party turned back, and after much hardship reached St. Louis in September of 1806 to great acclaim.

What came back of natural history interest from this transcontinental "enterprise of many aims and a product of many minds"? The first shipment of specimens and "sundry articles" was sent by barge down the Missouri River from Fort Mandan on 7 April 1805,[2084] addressed to "the President of the U.S." On 15 November it was recorded in the "Minutes" of the American Philosophical Society that "A box of plants, earths and mineral[s], from Captain Merewether Lewis, per Jefferson, who wishes the seeds sent to Mr. Wm. Hamilton; Vaughan and Seybert to examine the earths and minerals; a resolution requesting Mr. Hamilton to plant the seeds and report the results with descriptions and specimens. 'The Hortus siccus is referred to Dr. Barton' to examine and report."

Barton immediately wrote Jefferson on 17 November: "I have seen, but have not yet had time to examine with sufficient attention, the animals collected by Capt. Lewis." Barton proceeded to identify the magpie as *Corvus pica*,[2085] which he read inhabited Hudson's Bay; the marmot; and the "Taye of California," which he concluded had been described and figured by Venegas in 1757—the Rocky Mountain sheep (now *Ovis canadensis* Shaw). Lewis and Clark had called it the "ibex" or "arali" or "bighorn." Barton promptly announced receipt of the animals in *Philadelphia Medical and Physical Journal* 2 (1805) Pt. 1. and continued notes until the demise of the *Journal* in 1809.[2086]

Jefferson responded on the 21st:

> *Mr. Peale informs me that the Missouri magpie is precisely the same with the European. had not expected this, tho' I never had observed the magpie of Europe, bec*[ause] *the descriptions speak of the blue & red hues of the wings & tail, which I had not observed on the Missouri magpie. The marmotte may very possibly be the Arctomys Citellus. but, from what I observed in Europe both of animals & vegetables, natives, I am apt in all cases to expect a sufficient permanent difference to authorize the considering them as specifically different. I shall be happy however to learn the ultimate result of your examination of all the subjects which I sent to Mr. Peale.*[2087]

2082 Jackson, *Lewis and Clark*, 170–171; Betts, *Jefferson's Garden Book*, 363; Flores, *Custis*, 260; J. C. Loudon, *Gardener's Mag.* 11 (1835): 312–316, and 12 (1836): 210, for United States association with Dr. Mease, William Prince of New York, Mrs. Bernard M'Mahon, Long's Expedition, etc.

2083 Pursh, *Flora*, xi–xii.

2084 Jackson, *Lewis and Clark*, 231–242.

2085 [The Lewis and Clark expedition sent back the Black-billed Magpie, described later as *Pica hudsonia* by Sabine in 1823, to Jefferson in 1805. The European Magpie is Linnaeus's *Pica pica*.]

2086 See our Chapter XXIV, Birds, and Appendix I, Bibliography of Barton's Writings.

2087 Barton Manuscripts, HSP.

Again on 22 December 1805 Jefferson wrote Barton:

> *...I send you drawings & specimens of the seed, cotton, & leaf of the Cotton Tree of the Western country, received from Genl. Wilkinson at St. Louis. to these I must add that it appears from the journals of Lewis & Clarke that the boughs of this tree are the sole food of the horses up the Missouri during the winter.*[2088]

Barton replied on 27 December, commenting on cottonwood trees, the "Tucan of Hernandez,"[2089] and the pygmy shrew.[2090] He also discussed the status of a horned lizard that had recently been received.

> *The lizard has come safe to the Philadelphia Society, and is alive, in my possession. This singular animal, of which I am preparing a description, with a drawing, for the Society, was known to Hernandez, who figures it, pretty well, and calls it Tapayaxin or lacerta orbicularis.*[2091]

Jefferson "snatched a moment" to tell Barton that on 11 January twenty-one Indian chiefs from the Missouri River country with two interpreters would be visiting Philadelphia, and thus offer an opportunity to collect the vocabularies in which both were interested. Four years later Barton requested from Jefferson four or five Mandan words.

Jefferson's original plan was that Lewis should publish the results of the journey himself and get full credit for his discoveries in the West. Natural history objects were to be identified and described by Barton, who had employed Pursh for botanical aid. Live animals were to be sent to the care of Peale at the Museum. The sixty-seven dried plant specimens given into Barton's care for identification were a challenge, and he now planned to add them to his "Flora of North America." Was this Pursh's opportunity to take snippets from specimens for later study?

Jefferson announced separately to each on 2 December 1806 that Lewis would visit him. To Peale he wrote: "I expect Capt. Lewis here [Washington, D.C.] today or tomorrow. I presume that after a while he will go on to Philadelphia and carry some of his new acquisitions." To Barton: "I expect Capt. Lewis today or tomorrow. He brings with him much in the lines of botany & nat. history. I presume he will go onward to Philadelphia after some delay here. He will doubtless ask the aid of yourself & brother literati of Philada in the arrangement of these articles."[2092] Was this material recently collected in the vicinity of St. Louis where Lewis was now governor? The term "brother literati" referred particularly to Peale. Jefferson was well aware of the intense feeling of rivalry that had developed over the years between Barton and Peale, and which had worsened over the acquisition of animals from the expedition. Being as possessive as Barton, Peale did not want to let museum material out of his control, for he well knew that scientific descriptions might be long in coming. On New Year's Day 1806 Peale wrote to Jefferson: "I think I sent you Capt. Lewis's original catalogue of the articles he had forwarded to me. I retained no copy of it & having occasion to turn to it could thank you for it."

2088 McKelvey, *Trans-Mississippi West*, chap. 3, especially 71-76.

2089 [What Barton recognized as "*Tusa hernandisii*" may be the Tuza or *Zygogeomys trichopus* Merriam from Mexico. MSW. The Cottonwood Tree *Populus deltoides* was described by Bartram in 1785. IPNI. ITIS.]

2090 [*Sorex*. The modern pygmy shew is *Sorex hoyi* Baird. MSW.]

2091 Jackson, *Lewis and Clark*, 275-277, reproduces the whole letter with notes. The horned lizard Barton described in *PMPJ Suppl.* 1 (1806): 68, calling it *Lacerta tapajaxin* in 1806, later *Phrynosoma cornutum* Harlan, 1825.

2092 Barton papers, APS.

Bernard M'Mahon (or McMahon, c. 1775–1816), seedsman and "Botanical Book Store," wrote Jefferson 26 December 1806 that he wished to grow seeds from Western America, to which Jefferson acceded, sending him duplicates of those sent to Hamilton. On 5 April 1807 M'Mahon wrote Lewis about the possibility of hiring "a very intelligent and practical botanist" who was boarding with him, Pursh "better acquainted with plants, in general, than any man I ever conversed with."[2093] Soon after his return from his northern trip for Barton, Pursh examined the novelties grown from seed, and made some drawings. Lewis paid Pursh $8.00, at least on one occasion, but all did not go smoothly. M'Mahon wrote Jefferson 17 January 1810 that Pursh progressed "as far as it could be done in the absence of Govr. Lewis," and that Pursh was uneasy. M'Mahon detained him until April, and shortly thereafter he became gardener to Hosack in New York.

Jefferson had learned in October 1809 of Lewis's mysterious death in Tennessee. Lewis had made little progress on editing his journals, and Clark now took over the task adding notes of his own. Among Barton's miscellaneous papers is a fragment of a *Prospectus* for publishing the Lewis and Clark journals. It is dated 1 June 1808. Another proposal was issued by the same prospective publisher, Conrad, who about this time went bankrupt.[2094] Although Jefferson had given out news from reports of the expedition, Patrick Gass pre-empted Lewis's expected account with his *Journal of the Voyages and Travels of a Corps of Discovery under the Command of Captain Lewis and Captain Clark* (Pittsburgh, 1807).

On 24 December 1809 M'Mahon wrote Jefferson:

> *I have, I believe, all his collection of dried specimens of plants procured during his journey...in consequence of a hint...given me by Gov. Lewis on his leaving this city...for fear they should make their way into the hands of any Botanist, either in America or Europe, who might rob Mr. Lewis of the right to first describe and name his own discoveries, in his intended publication; and indeed I had strong reasons to believe the opportunity was coveted by——which made me still more careful of his plants.*[2095]

To whom did this blank refer? Was M'Mahon referring to Barton's known propensity for publishing sometimes without adequate credit to a collector? Or had he begun to distrust Pursh? In his preface to his *Flora* Pursh wrote: "A small but highly interesting collection of dried plants was put into my hands,"[2096] referring to the snippets from Lewis's specimens he had pilfered for later study. Muhlenberg had learned from Mrs. Merry, wife of a British diplomat, during their stay in Lancaster from August to October 1806 that Lewis had given her seed from the expedition. There is no record, however, that the gift to Mrs. Merry ever flowered into English publication. As late as 22 May 1811 Muhlenberg complained to William Baldwin:

> *Pray have you specimens of any of Lewis's plants? I have tried every method to get a sight of them,—but in vain. My friends at Philadelphia have denied me the pleasure of seeing them in flower. I would wish to add them to my catalogue, without any description;—leaving that to the compilers of Lewis's work. I am afraid the description will be made in England, and*

2093 Jackson, *Lewis and Clark*, 263; for Pursh, 398 and passim.

2094 Jackson, *Lewis and Clark*, 394–397, on Conrad's proposals to publish; 385–386, for Lewis's; and 546, for Biddle's.

2095 Jackson, *Lewis and Clark*, 485.

2096 Pursh, *Flora*, X.

> *Lewis's work will come too late. Perhaps you can get the specimens from Mr. M'mahon, or Dr. Barton.*[2097]

Muhlenberg well knew Barton's propensity for seeking ever more data, but he had not known the restriction on publication of new species, nor that Barton waited for the narrative of the journal for whatever information it might contain on habitat and locality. He also was well aware that Barton had many more commitments than he could ever meet.

Clark forwarded the journals to Jefferson in 1810, and Jefferson described them as "Ten or twelve such pocket volumes, Morocco bound,...small 8 vos and opened at the end for more convenient writing. Every one had been put into a separate tin case, cemented to prevent injury from wet." Jefferson requested Nicholas Biddle (1786–1844), former diplomat and now on the staff of *Port Folio*, to complete the editing of the narrative and Barton to furnish the natural history text. Biddle received the journals in March 1810, and soon put the three field books on astronomy, geography, and natural history into Barton's hands. Barton contracted with Clark to produce the text within six months of the completion of Biddle's part. Biddle, after some work on the text, adding in excerpts, edited, from Patrick Gass's journal, turned his assignment over to Paul Allen, a journalist who completed the editing late in 1811. Since Barton's contribution was never completed, *History of the Expedition under the Command of Captains Lewis and Clark* appeared in two volumes in Philadelphia (1814) under the name of Paul Allen. Naturalists who had eagerly looked forward to the *History* for Barton's account of the fauna and flora of the west were greatly disappointed. Months before the *History* appeared, Pursh's *Flora* had publicized the novelties from the expedition to the botanical world.

Meanwhile the rivalry between Peale and Barton had led Clark to write Barton 22 May 1810: "I have wrote to Mr. Peale requesting him to permit you to discribe all & every of the animals &c which he has received from the late Lewis and myself." "All & every" included the skins that Peale feared might become a permanent part of Barton's own growing collection. Clark continued, "as to my self I cant have the smallest objection to your adding parts of the materials or matter of your own, in the Scientific work by way of notes: or as you mention in your letter to me."[2098] Barton's own commentary became part of almost any work he published, for example, in contributions of others to his *Philadelphia Medical and Physical Journal*. He was eager to include what he knew beyond what others recorded. How far Barton had progressed on the report of the botany of the expedition or what use he made of the information on the specimen labels is not preserved.

Jefferson explained in a letter, 14 July 1808, to Count Lacépède, French naturalist whom he had met at the Jardin du Roi, that "the parts relating to the plants and animals observed in [Lewis's] tour will be delayed by the engravings. In the meantime the plants of which he brought seeds have been very successfully raised in the botanical garden of Mr. Hamilton of the Woodlands and by Mr. McMahon a gardener of Philadelphia."[2099]

Barton complained to Langsdorf in St. Petersburg, in April 1810, comparing the Lewis and Clark and Krusenstern expeditions:

> *Mr. Daschkoff,*[2100] *who is my near neighbor expressed much satisfaction in hearing from me, that you are engaged in writing the history of the Voyage of Captain* [Krusenstern].[2101] *I regret that the American*

2097 Darlington, *Baldwin*, 34.

2098 Barton papers, APS.

2099 Letter in Jackson, *Lewis and Clark*, 442–443.

2100 Andrew Dashkov, Russian consul in Philadelphia.

2101 Adam Johann von Krusenstern (1770–1846), Russian hydrographer, had circumnavigated the globe in 1803–1806 under government sponsorship to inspect the fur trade and left important descriptions of the northwest coast of America. His account appeared as *Reise um den Welt in den Jahren 1803, 1804, 1805 und 1806*

> *Government does not imitate that of your Country in giving the means of undertaking expeditions for similar purposes. Something, indeed, it has done in regard to the expedition of Captains Lewis and Clark, who have succeeded in crossing the continent to the Pacific Ocean. The history of this enterprizing journey is not yet published, but may be looked for in the course of the ensuing year.*[2102]

Barton suffered a severe illness during 1810, which may have increased Jefferson's concern for the safety of the natural history portion of Lewis's journal. Jefferson "hoped" in October that if Barton could be instrumental toward having the manuscript preserved and returned to the Lewis family, he should "feel it as a very particular obligation." At this time he was sending Barton some seeds of "Ricara [Arikaree] snap beans" and of "the Columbian Salsafia brought form the Western side of the Continent by Govr. Lewis," finding the beans "the most excellent we have had," but Jefferson had not yet judged the salsify. This early record for the introduction of the European *Tragopogon porrifolius* suggests some relation to commerce with the missions in the Clearwater region of Idaho. Barton replied regarding the Lewis papers in his letter of 16 October 1810:

> *I assure you and beg you, Sir, to assure his friends that they shall be taken good care of; that it is my sincere wish to turn them, as much as I can, to his honour and reputation, and that they shall ultimately be deposited, in good order, in the hands of General Clark, or those of Mr. Conrad, the publisher. During the Governor's last visit to Philadelphia there was some difference between him and me; originating wholly in the illiberal and jealous conduct of some of my enemies here, who laboured, not without some effort, to excite uneasiness in his mind, as to my friendship for him:—I cherish, with respect, the memory of your friend; and believe me, Sir, the manner in which you speak of him, in your letter, will act not feebly in making me careful of his fame. His fate was, indeed, melancholy and unhappy; but similar has sometimes been the fate of the best and wisest of men.*[2103]

Jefferson's prompt reply was dated 22 October:

> *I thank you for the assurance respecting Gov. Lewis's manuscripts. They will be thankfully received by his family with respect to his just recognition, I know it will be safe in your hands, and the successful achievement of his great and bold enterprise is gratefully felt by the world, and with disposition to embalm his memory.*[2104]

Meanwhile Barton was bringing out some of his own works: *Geographical View* in 1809, and *Collections* in 1810. Jefferson was prompted to write Barton 3 April 1813, when inexplicably, except to increase his income, Barton had applied for a position as physician in the United States Army Medical Department, and wanted a recommendation from Jefferson: "When shall we have your book on American botany and when the 1st volume of Lewis & Clark's travels? both of these works are of general expectation, and great interest, and to no one of more than to myself." Then he added to his failing friend, "Accept the assurance of my

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(Berlin, 1810–1812) and *Voyage around the World in the Year 1803, 1804, 1805, & 1806...Translated...by Richard Belgrave Hoppner* (London, 1813).

2102 Barton papers, APS.

2103 Jefferson papers, LC.

2104 Jefferson papers, LC.

constant esteem and respect."[2105] Before there could be a decision, Rush died and Barton succeeded to the chair for the Theory and Practice of Medicine without, however, relinquishing his lectures in Natural History and Botany, but not his Chair in Materia Medica.

The natural history part of Lewis's journal was still among Barton's papers at the time of his death in 1815, and Jefferson sought the aid of Corrêa da Serra and Mary Barton to retrieve them from among the many unfinished manuscripts in his study. See our Chapter XXXI, Conclusions.

In December 1813 Jefferson lamented to Humboldt:

> *You will find it inconceivable that Lewis's journey to the Pacific should not yet have appeared, nor is it in my power to tell you the reason. The measures taken by his surviving companion Clark, for the publication, have not answered our wishes in point of dispatch. I think, however, from what I have heard, that the main journal will be out within a few weeks in 2 vols. 8 vo, these I will take care to send you with the tobacco seed you desired,... The botanical and zoological discoveries of Lewis will probably experience greater delay, and become known to the world thro other channels before that volume will be ready. the Atlas, I believe, waits on the leisure of the engraver.*[2106]

Indeed, that very month Pursh's *Flora* (but carrying the date 1814) had come off the press in London. When John W. Francis, who had just received his medical degree under Dr. David Hosack in New York and was then visiting in England, wrote to his mentor on 15 February 1816, he remarked that:

> *Barton complained to Mr* [Robert] *Brown, Sir Joseph* [Banks's] *private librarian & a scientient Botanist, in strong language of Pursh's preface: Pursh it seems has actually had manufactured in his volumes the treasures of botanical knowledge that were to have made a part of Lewis & Clark travels, as these treasures he purloined from Barton, who I suppose in his turn procured them in the same way.*[2107]

Francis's cutting accusation of Barton, though in this instance inaccurate, was symptomatic of the reputation Barton had acquired over the years from unfriendly critics.

A. C. Camper, who had been in correspondence with Barton, wrote from Franeker [Netherlands] 20 June 1816 to Wistar:

> *...I lament the loss of the pages 20. 22. 23. To the letter of Prof. Barton about the Lacertina Siren. His description is the best I know and I wonder that Cuvier had no knowledge of it, at the time he wrote the recherches anatomiques sur les reptiles regardis comme Lacitens etc. in the Cahiers de Zoologie et d'Anatomie Comparée of Humboldt. His description w*[h]*ere the anatomy and skeleton is represented, will be known to you surely...*
>
> *The expedition to the Sources of the Missouri and down to the Pacific Ocean will be of a high interest and give the best account of a Continent hitherto unknown–. I'll peruse it with the most attention.*

2105 Barton papers, APS.

2106 Jefferson papers, LC. De Terra, "Humboldt," 794.

2107 Francis papers, Manuscript Division, NYPL.

> *The death of the celebrious Dr. Barton is much to be lamented and I'll be much indebted to you if you will procure me a collection of his papers in Natural history which I shall be very happy to pay.*
>
> *...Perusing the valuable history of the expedition of Capt. Lewis (at least superficially) I met with no account on Natural History, Botanics, and Geology or Mineralogy, which is a loss scarcely to be repaired. In consequence I presume the Museum of the United States will not be enriched by that expedition.*[2108]

Fortunately Camper was mistaken as to plant specimens. They passed from Barton's care with at least some of the drawings made for the intended publication, and some manuscript, to the American Philosophical Society. The specimens were eventually placed in the Philadelphia Academy of Natural Sciences. Even the snippets purloined by Pursh circuitously came to the Academy, after their purchase by Edward Tuckerman at the sale of Lambert's library and herbarium in London in 1842. Only a fraction of the zoological specimens survive from their days at Peale's museum. They are today in the Academy, Harvard, and some even in the Smithsonian's National Museum of Natural History, Washington, D.C.

In Peale's Museum there went on display a wax figure of Lewis in Indian dress and ermine robe, the latter a gift from Sacajawea's brother, a Shoshone chief. An unsigned drawing of the Pronghorn preserved among Barton folders and recorded as sketched in Peale's Museum is presumably of an animal from the Expedition. Another is the drawing of the Fisher, *Martes pennanti*.[2109] A drawing of the horned toad may not have been of the specimen to which Jefferson referred in his letter of 1805. Peale himself made a monochrome watercolor of the Western tanager.

Alexander Wilson complained that it "was the request and particular wish of Captain Lewis, made to me in person, that I should make drawings of such of the feathered tribes as had been preserved, and were new." These had been Clark's crow (now Clark nutcracker), the Louisiana tanager (now Western tanager), and the Lewis's woodpecker.[2110]

Jefferson was gratified with the success of the Lewis and Clark Expedition. It "has entirely fulfilled my expectations in setting it on foot."[2111] He was disappointed that the results were not immediately given to the world, and that Lewis, therefore did not receive his full credit in his lifetime. Lewis himself had failed to complete the editing of his journal, whether from lack of time in his new appointment as governor in St. Louis, or for other personal reasons. Barton had not received the natural history notebooks until late in 1811, with their, at times, detailed descriptions and sketches, and he was not one to have been satisfied with a mere catalog. Pursh named the genus *Lewisia*,[2112] an "elegant plant," the Bitterroot, from the banks of the Clark River.

John Leigh Bradbury

Jefferson was concerned that British discoveries in the Missouri River country would snatch priorities from Lewis and Clark, particularly so when John Leigh Bradbury (1768-1823)[2113] appeared at Monticello in August 1809. Well he might be concerned, for Pursh in 1814 was to publish not only the new plants of Lewis and Clark, but Barton's and those of

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2108 APS B: W76 no. 31.

2109 [Originally described as *Mustela pennanti* Erxleben, 1777, but now *Martes pennanti*. MSW.]

2110 [Respectively now, *Nucifraga columbiana* and *Piranga ludoviciana*, both described by Wilson in 1811, and *Melanerpes lewis* by Gray, 1849. AOU.]

2111 *Proc. Amer. Philos. Soc.* 95 (1951): 612.

2112 [*Lewisia rediviva* Pursh, Bitterroot in the family Portulacaceae was published by Pursh, Dec. 1813, *Fl. Am. Sept.* ii, 368. IPNI. ITIS.]

2113 McKelvey, *Trans.-Mississippi West*, 108-109, tells the story of Bradbury's accomplishments, and the pirating of his new plant species by Pursh. Graustein, *Nuttall*, 56-58 and passim; Rickett, "Bradbury," 62-64; Charles Nelson and John Parnell, *Bartonia* 54 (1988): 107-115 detail some of Bradbury's "Irish connections."

Barton's other disciple, Thomas Nuttall, as well as those of Bradbury. Bradbury, married and the father of six children, came on behalf of Liverpool botanists, his patron, William Roscoe, and their associates at the Liverpool Botanic Garden to collect seeds and plants. He had long been interested in botany, was a corresponding secretary of the Liverpool Philosophical Society, and had been elected to the Linnean Society in London. His first observations came from St. Louis to be transmitted to Liverpool. On 30 September 1809 Jefferson requested Charles Cotesworth Pinckney to put "the enclosed letters under the protection" of his cover. "They are from a Mr. Bradbury, an English botanist."

Meanwhile from March to September 1810, Bradbury in St. Louis was corresponding with businessman Samuel Bridges of Newark, New Jersey, giving a description of the area, contrasting St. Louis and Louisville, Kentucky, and suggesting possible commercial ventures they might enter. He suggested bringing needed tools for milling.[2114] During the fall he made a few local excursions with Nuttall.

Prompting Barton to get on with his flora, and with the report of the Lewis and Clark plants, Jefferson wrote 11 September 1811 to him, in part:

> *You will have seen the name of a Mr. Bradbury among the adventurers from St. Louis up the Missouri & lately returned thence to St. Louis. He is an English artisan from Liverpool, who being desirous to move his family to this country, and not free by their regulations, to come under that character, was employed by the Botanical Society of Liverpool to come out as their herboriser. he is an estimable man and really learned in the vegetable, animal and mineral departments of science. he is indefatigable in his researches, and before that journey, had already discovered a great number of new articles, which he has communicated from time to time, to his employers; and has returned to St. Louis fraught, without doubt, with a great mass of information which will imediately pass the Atlantic to appear first there. He was recommended to me by Mr. Roscoe, & staid here three weeks, passing every day in the woods from morning to night. he found, even on this mountain, many inedited articles. With respect therefore to your work, as well as Govr Lewis's, I am anxious that whatever you do, should be done quickly.*[2115]

Now that he had completed his mission for his Liverpool associates Bradbury aspired to make his livelihood in the United States. He inquired of prospects within the nation: a possible botanic garden, and another attempt, after the curtailment because of Spanish and Indian hostility of the Freeman-Custis Expedition dispatched by Jefferson in 1805, to study another portion of the newly acquired Louisiana Territory. He applied to Jefferson 5 March 1812:

> *The term of my mission to Louisiana having expired I arrived here a fortnight ago from St. Louis in the hope of receiving my Family in the insuing Spring. I am here informed that the Government of the United States have it in contemplation to establish a Botanic Garden at the City of Washington and that no appointment is as yet made of a Person to superintend it.*
>
> *If this information is correct I would willingly offer myself to those in whom the power of making the appointment is vested, but suppose I am*

2114 Found among Barton's papers now at the APS are three letters, Bradbury to Bridges, 15 March, 20 August and 13 September 1810. Had they been forwarded to Barton for their description of the area?

2115 Barton papers, APS.

totally unknown to them. If Sir you deem me qualified to fill the station you will render me greatly your Debtor by making this my wish known to those who have authority in this business.

I shall only add on this subject that my extensive acquaintance amongst the Naturalists of Great Britain together with what plants I have acquired in Louisiana would enable me to assist the establishment considerably.

I ascended the Missouri last summer to a little above the Mandan nation, and found the soil and aspect of the country changed after passing the River Platte and consequently abounding in natural productions almost wholly different from those to the Eastward of that river. The Plants which I there collected and which do not appear to be described in the last edition of the Systema Naturae exceed 100 species some of which are beautiful.

In Zoology I think I shall add two species of Crotalus, a Talpa, a Sciurus, and an animal which cheek pouches as Mus Bursorius of Linnaeus[2116] *but differing from that animal specifically yet agreeing in general character and both so much disagreeing with the genus Mus that I am of opinion they must constitute a new genus betwixt Mus & Arctomys.*

I have an ardent wish to ascend the Arkansas and Red Rivers confident that their Borders would afford a Rich harvest. If I can obtain the situation mentioned above perhaps an opportunity may be afforded me Whither or not there is any probability that I may beg Sir you will have the Goodness to cause me to be informed by Letter to the Post Office Newark. State of New Jersey.[2117]

Jefferson's reply demonstrated once more the dilemma of the lack of interest of most government officials in the support of scientific programs. It added, for example, to Peale's failure to found a national museum. Yet Jefferson was still hoping that *American* discoveries made by the Americans, Lewis and Clark, would be described, since not by Lewis, then by the *American* scientist, Benjamin Smith Barton. In his characteristic friendly manner, he had diplomatically expressed a hope for the "benefit" of Barton's information. Jefferson's letter of 21 March 1812 to Bradbury read:

I duly received your letter of the 5th inst. and congratulate you on your safe return from your long peregrination. I hope it will not be long before we shall have the benefit of the information it has furnished you.

With respect to the establishment of a Botanical Garden at Washington by the General Government, be assured it is an idea without the least foundation. no doubt it is desired by every friend of science and it may be expected by such of them as have not sufficiently contemplated either the powers or the present circumstances of the government. There have been repeatedly applications by individuals, & one of them lately for the use of some of the public grounds at Washington for the establishment of such a garden, and if the suspicion that it would be converted into a mere kitchen garden for the supply of the town market can be removed, it is in the power of the President and probably be within his disposition so to dispose of it. but I do not believe the government will or can do more. The setting you right in this fact being the best service I can render you in

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2116 [*Geomys bursarius* Shaw, Plains Pocket Gopher. MSW.]

2117 Jefferson papers, LC.

the case, I do it as a duty & add with pleasure the assurance of my esteem & respect.[2118]

It was probably Samuel Latham Mitchill who editorialized in 1813 in *Medical Repository* on the cultivation of American botany by foreigners, and with a dig at Barton for not having given Lewis's description of the country to Americans:

> *It is very remarkable with how much more avidity the history of our native vegetables is promoted by foreigners, than by our own people.*

He named Michaux, and Rafinesque, then continued:

> *New York has had the pleasure of beholding Mr. Bradbury. This enterprising naturalist has ascended the Missouri, beyond the great bend, the Ricara* [Arikara] *tribe. And he has returned safe with specimens of the vegetables and minerals that have fallen his way. Of the former, there appear to be many new species.*
>
> *Mr. Bradbury confirms the accounts heretofore received, of the vast prairies or plains which the voyager traverses in Upper Louisiana. He describes them as totally destitute of wood; this latter growing only on the water courses and low margins of rivers. He saw herds of bisons*[2119] *to the number probably of some thousands, who feed upon the grasses which these level tracts produce. In certain places there are strata of coal. Some of these are actually on fire, and exhibit the appearance of burning plains, as they have been called. The fragments of rock, said to have been brought from the mountains situated west of the head waters of the Missouri, are sand stone, the grains of which are curiously connected by a siliceous cement, rendering them very smooth and hard... Mr. Pursch went to Europe for the purpose of exhibiting his performance more advantageously to the scientific world.*[2120]

Bradbury returned to England about 1815 where he published his *Travels in the Interior of the United States in the Years 1809, 1810, and 1811...* (Liverpool & London, 1817; ed. 2, London, 1819). His ambition to have it published in the United States was not fulfilled. He returned to the St. Louis area with his large family, establishing growing gardens and shipping some of his produce to New Orleans and seeds and plants back to Europe. Unsuccessful there, he moved to Kentucky where he died in 1823. Europeans had little concept of the costs necessary to make shipments from that distant region, and there was not a large enough population in the area to sustain his business.

2118 Jefferson papers, LC.

2119 [*Bison bison* L., 1758, initially described by Linnaeus as *Bos bison*.]

2120 *Med. Repos.* n.s. 1 (1813): 420–421.

Chapter XVIII

Hortus Vivus: The Search for Seeds for Barton's Botanic Garden

"We talk incessantly of the benevolence of Providence: but, really, from an inattention to his works, a large portion of what we say, is mere theoretical or habitual declamation. But how abundant is the display of that benevolence, when we see almost every weed, even the vilest, and seemingly most useless, even those which are poisonous to man, affording subsistence to other animals, and, through the medium of some of these animals, even to man himself!"
—Barton in *Discourse*, 50.

The importance of living plant collections for the study of the flora of the country and for its medical potential was the subject of the Rev. Nicholas Collin in his appeal before the American Philosophical Society members in 1789, when he urged the society to encourage a botanical garden. "Natural history" he read, "demands more esteem from our seminaries of learning: the principal among them should immediately form botanical gardens, on a plan so liberal as gradually to receive all the trees, shrubs, and plants most valuable in every respect."[2121]

On 14 March 1788—a year before Collin's appeal—the Philadelphia College of Physicians had petitioned the Pennsylvania legislature for the establishment of a botanical garden. Nothing came of it, and so Rush was appointed by the medical faculty to place a "memorial" statement before the state legislature in support of the garden and the medical school. Dr. John Syng Dorsey, a member of the committee appointed by the legislature, wrote Rush 6 January 1806: "as regards the Botanic Garden I have little hope—the present legislature are not exactly the giving kind."[2122] Hope had not been given up entirely, for on 6 December Barton felt compelled to write to Dr. Woodhouse:

> *Sir, I am prevented by very urgent business, from attending the meeting of the Professors and Trustees, this afternoon. The same circumstance prevents me from exhibiting the address on the subject of a Botanical garden, which I am anxious to exhibit in person at any day after this day. I shall be able to attend with the address, in the want of which I cannot but be deeply interested.*[2123]

One year later, however:

> *By an act of assembly passed 19th of March, 1807, there was granted to the University of Pennsylvania the sum of $3000—out of the monies they owe the State—for the purpose of enabling them to establish a Garden for the improvement of the Science of Botany, and for instituting a series of experiments to ascertain the cheapest and best food for Plants, and their medical Properties & Virtues.*[2124]

2121 Bell, "Collin," 547.
2122 Barton papers, APS.
2123 Barton papers, APS.
2124 Memorandum in an unidentified hand, Barton papers, APS.

Unfortunately the garden did not materialize—the University could not afford it.

Having read of the legislative action in the newspaper, and seizing an opportunity, James Robinson, Sr., near Martinsburg, Virginia, wrote:

> *To the Commissioners of the Botanic Garden, Gentlemen,...I have it in my power to furnish you with the best plants in the Continent and if you will let me know what compensation you will make me if I do show or furnish you with the plants...I would rather that some one of the skillfulest of the company would come to Virginia, where I reside, as I am an old man, and I shall show them what will completely furnish your garden.*

He then listed fourteen offers:

> *1. Columbia root*
> *2. Pleurisy root*
> *3. Ipecachuana, two sorts*
> *4. Flux root or womans friend*
> *5. Spikenard root*
> *6. Sarsaparella*
> *7. Solomons seal*
> *8. Rose, noble*
> *9. Bears ear*
> *10. Dragons tongue*
> *11. Adders tongue*
> *12. Sweet senna*
> *13. Sweet myrrh or annise*
> *14. Angelico*
> *Those and a Number of more that are Non descript to me, especially* [a] *vine, a great beauty.*[2125]

Did Barton, or Pursh, visit him? Since the offer involved University funds rather than further state aid, no action was taken.

The exchange of seeds and plants had long existed between the colonies and the mother country. One of the missions of John Vaughan, after his appointment as the "first true librarian" of the American Philosophical Society in 1803, had been to facilitate dispatch of seeds overseas, or the receipt and dispersal of such. Jan Kops, Utrecht professor of botany, acknowledged from The Hague, 7 January 1807, to Barton, then a vice-president, the receipt of forty-four kinds of seeds supplied by M'Mahon through John Vaughan; and he would reciprocate.[2126] Without a University-supported botanical garden, Barton had developed by 1810 a small plot of specialties and a greenhouse near his dwelling at 241 Chestnut Street.[2127] With the decline of Hamilton's "Woodlands" he now depended more upon the plants he himself grew for pleasure, for his own and his pupils' experiments, and for possible medical interest and utility. He had, for example, the local endemic, *Talinum teretifolium*, which had been first collected and illustrated by John Banister about 1689, and for which Pursh would publish a description in his *Flora*. Barton recorded:

> *July 18, 1806. Talinum given to me by Dr. Baldwin, is now in flower in my garden. The doctor says he has always found the capsule 3-valved...*[it grows] *in high ground, dry, but not sandy, of a very loose*

2125 Barton papers, APS.

2126 Barton papers, APS. For Jan Kops (1765–1849) see F. A. Stafleu, *Wentia* 16 (1966): 2.

2127 H. Muhlenberg, Lancaster, 17 Dec. 1810 to S. Elliott. AA.

> *texture, so that the plant is very readily pulled up, & at the same time in a black soil. The vein of soil in which it grows, is called the 'Black Barrens' & runs from Pennsylvania into Maryland: it is, he says a very peculiar soil...about 30 miles from Philadelphia & 8 south of Downington. Marshall has found it in Goshen township about 15 miles from Philadelphia in the same vein.*

On 20 August 1806 he noted:

> *I examined two flowers of the Talinum in my area, in full bloom: one had 13 stamens, as well as I could count them & five petals, the other had certainly six petals & certainly 15 stamens, calyx two...This plant continues flowering in my yard almost every day: yesterday, there were at least 6 or seven flowers open. It makes a pretty appearance.*[2128]

He welcomed new sources of exotics as his pupils completed their medical degrees and wandered to new fields. Unusual plants came from his graduates who sailed as ships' doctors to Charleston, Canton, Calcutta, or "Buenos Ayres," and who, incidental to their duties, collected seeds for him. He even requested a certain Mr. A. Bryant, who voyaged to Canton in about 1805, to send him Chinese flower seeds.

Fortunately some drawings of these treasures from far away survive, although we wish notes had been recorded as to when the plants arrived and their origins. Of Barton's medical graduates who furnished him with seeds and specimens, William Darlington of West Chester was most generous. Sailing as apprentice doctor on the ship *Bengal*, Darlington spent March and April of 1807 in Calcutta. There he met William Roxburgh (1751–1815), superintendent of the Honourable East India Company Botanical Garden.[2129] Roxburgh had attended medical school in Edinburgh, studied botany under Professor John Hope, and qualified as surgeon's mate by serving in the Company's ships, the famous East Indiamen. Between voyages he completed his medical studies, gained his M.D., and after various hospital assignments around India from his arrival in 1776 until 1793, he succeeded Robert Kyd as the second superintendent of the garden at Calcutta. During the years 1793 until his departure in 1813 Roxburgh increased the botanical garden plants tenfold. A collection of 2,542 life-sized colored drawings by Bengali artists is his legacy, representing most of the species described in his *Flora Indica*[2130]—an amazing achievement. Roxburgh's letter was delivered to Barton, presumably by Darlington's hand, on 14 November, soon after Darlington's return to Philadelphia. It reads:

> *Botanic Garden near Calcutta May 1, 1807*
>
> *Dear Sir*
>
> *I have the pleasure to acknowledge the reciept of your letter, with the two pamphlets relative to the generation of the Opossum of North America; by Dr. Darlington, who came here two or three weeks since, and delivered them, and return you my best thanks for your kindnys, and attention.*
>
> *The pamphlet for the Asiatic Society I shall shortly present in your name.*

2128 Barton papers, APS.

2129 Burkill, *India*, 22–26; Desmond, *Dictionary*; M. P. Nayar & A. R. Das, "Glimpse of William Rosburgh," *J. Econ. Taxon. Bot.* 5 (1984): 1159–1167, portrait and handwriting.

2130 *Flora Indica* (Serampore, India, 1820–1824, 2 vols.). Present program in Hyams & MacQuitty, *Gardens*, 220–223.

Dr Darlington is on the point of departure, and has again called on me, for what I might have ready for America. I take this favourable opportunity to send you the accompanying parcel of seeds.[2131] *Some of which I hope will produce ornamental plants. Dr Darlington has seen this Garden, and I believe is pleased with it, notwithstanding the season is not very favourable to vegetation being hot and dry, which will continue till the middle nearly of June.*

I shall be very happy to send you any farther collection of seeds you may desire, and remain Dear Sir With much esteem Your Obedt. Servt.

W. Roxburgh
favoured by
Dr Darlington
Received November 14. 1807[2132]

Possibly some of the "torrid zone" plants we identify among Barton's drawings represent exotics grown in Philadelphia from this gift of seed. Barton's herbarium contains twenty-eight numbered specimens labeled in Roxburgh's hand, besides eighteen unnumbered tickets in his hand, most with only the binomial. One reads "Dentella repens Tr[an]g[ue]—b[a]r Jul. 31 1799," and included is an isotype labeled "Sida Montana nob. Apr. 4, 1795," with its Tamil name.

In his answer to Roxburgh, Barton tells of his ambitions for his greenhouse, and of his desire for specimens "of goodly size" of *Dillenia*, a primitive genus related to the Magnolias, and *Uraria* Desv., a tropical Old World legume. As so often he apologized for the smallness of his return.

Philadelphia May 20 1809

Dear Sir,

*I ought long since to have acknowledged the receipt of your kind note, together with the present of seeds by Dr. Darlington. Since the return of Dr. D., I have erected upon my own grounds, a pretty extensive Green House, as we call it, into which I am extremeley anxious to receive a number of your vegetable countrymen, especially the hardie ones. Will you, my dear Sir, endeavour to assist me in this business? You have only to say what I shall send you. I send a long list by Dr. Lawton, a young man of merit, to whom I beg leave to introduce to your acquaintance. He will, with great pleasure, take charge of any of the live plants which you may think proper to commit to his care for me. I would prefer them hardiest of your vegetables, especially if along with this good quality, they should be useful or beautiful plants—I am not very old, but too old, I fear, to see your Dillenias, your Urarias, and other proud vegetables rise from seed. to any great nature. Do, then, let me see some of them alive, and of a goodly size. I shall not be ungrateful or negligent in making returns. I have marked on the list thus * those vegetables which I'm especially anxious to possess.*

I beg your acceptance of one of the copies & the pamphlet which accompanies this; and be so good as to present the other, in my name, to your learned and useful Society. I wish I had something more worthy of your and their acceptance. I also send for yourself, a copy of my Fragments, a work which may offer you some amusement, though indeed,

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2131 The Chinese Trumpet Creeper, *Campsis grandiflora* (Thunb.) K. Schum. (cf. Figure 89) may have been grown from this gift of seed from Roxburgh. [Described by Thunberg in 1784 as *Bignonia grandiflora*. TROPICOS.]

2132 Barton papers, APS.

it is a true fragment. Dr. Lawton will put into your hands a diploma from our Linnaean Society, into which, at my suggestion you and Mr. Carey have both been elected members. It is an institution which cannot fail, I think, to become very respectable in a few years.

I am, dear Sir, with much respect, Yours, &c.

B. S. Barton[2133]

copy

William Carey (1761–1834) succeeded Roxburgh as director of the garden and edited an edition of Roxburgh's *Flora Indica* (Calcutta, 1832, 3 vols.).

Darlington shared Roxburgh seeds with, among others, Dr. David Ramsay (1749–1815)[2134] whose establishment of a Charleston botanic garden in 1805 was noticed in Barton's *Philadelphia Medical and Physical Journal* after Ramsay's account of it in his *History of South Carolina*.[2135] The possible growing of teak in the Charleston garden created particular interest. John Lyon visited the Charleston Botanick Garden with Dr. and Mrs. Ramsay on a clear cold day in February, 1809. As a nurseryman acquainted with growing gardens on both sides of the Atlantic, he pronounced it "a Poor and insignifcant ill conduct thing."[2136] Ramsay had mentioned the pleasure of an earlier meeting with Lyon in his letter to Barton of 3 February 1803. William Baldwin, who met Ramsay in Charleston, wrote to Muhlenberg 23 December 1811 that "I have a printed catalogue of the plants in the Botanic Garden, at Charleston. I will copy it for you, should you desire it, at some future period. The whole number of the plants is 494."[2137] The garden operated until 1810.

Now back home in West Chester, Pennsylvania, Darlington wrote to David Hosack, in New York:

West Chester, Penn. Dec. 16. 1807

Sir,

Having lately returned from a voyage to Bengal, I brought with me the Seeds of some Plants of that Country which were politely presented to me by Sir Roxburgh who resides at E. India Company's Garden, near Calcutta. I could give no better proof of my desire for the prosperity of Botanical inquiry, and the propagation of Exotics in our country than by transmitting a portion of them to those who have evinced a praisworthy spirit in the establishment of Botanic Gardens, in the United States. Under this impression I sent samples of what were in my possession to the Botanical Society established at Charleston, S. Carolina: I beg you, Sir, to accept those which are herewith transmitted, hoping (should you consider any of them worthy of the attempt) that upon trial you may be successful in pursuing their vegetation. They were put up for me by Mr. Roxburgh on the first day of May last, and have been brought hence with considerable care. The growth of some of them may, indeed, be uncertain and difficult, more especially in a latitude as high as that of New York; but if it should be deemed of any value to you, it would afford me great satisfaction, as I consider it the duty of every friend to Science, to contribute his mite, when opportunity offers, of promoting the fruition of those public spirited

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2133 Barton papers, APS.

2134 Meisel, *Bibliography* 2: 114–116; Brunhouse, "Ramsay," 159; Robert Meriwether in *DAB*.

2135 *The History of South Carolina from its Settlement in 1670 to the Year 1809* (Charleston, S.C., 1809).

2136 Ewan, "Lyon," 45.

2137 Darlington, *Baldwin*, 57. This *Catalogue of Plants in the Botanick Garden of South-Carolina*, printed for the Botanick Society, by E. Morford, Willington & Co., 132, Broadstreet. MDCCCX, 14 pages, the only we have seen, was purchased by the Missouri Botanical Garden in 1989 from a London dealer.

Institutions, whereof—in the establishment of your Botanic Garden—you have given your Countrymen so laudable an example.—The cultivation of the Tectona grandis or 'ever-enduring Teak of India,' as it has been called, is a desideratum in our Country.—if it can but be naturalized to our Climate. I have little doubt but it may succeed in the Southern parts of the Union,—and think it worth the trial in the Middle States. The Dalbergia Sisso, or 'Sissoo Wood,' is also much esteemed in Bangor,[2138] *and much used by cabinet makers, &c.*

I should be happy, would my very partial acquaintance with the subject enable me to be of any service to you, in Your labors for the cultivation of that elegant branch of Natural History, either by forwarding to you Seeds or Specimens, of any Plants from this part of Pennsylvania.

With sincere good wishes for the success and prosperity of your Institution, I have the honor to be Sir, your most obedt. hble Servt. Wm. Darlington[2139]

A half century later Darlington wrote a requiem to those exciting but steamy uncomfortable days in Calcutta, days during the years of the sailing ships. He wrote to Joseph Dalton Hooker of Kew Gardens, who himself had been to India:

...It is now just half a century since I was a temporary resident of Calcutta—having passed the months of March and April, 1807, in that city. My Botanical Preceptor, Professor B. S. Barton, of Philadelphia, gave me a letter of Introduction to Doctor Roxburgh (if I rightly recollect), at the Hon. E. India Company's Garden. When I presented myself and Letter at the Garden, I was kindly received & most hospitably entertained, two of the most delightful days I spent in India, were (as I find by my notes, then made) Thursday, April 16th and Friday, May 1st, 1807 (the day our ship dropped down to Garden Reach, on its departure for Philadelphia) Those two sunny days were passed with Mr. Roxburgh, in the Company's Garden—surveying its beauties, and examining volumes of splendid Botanical Drawings, by native artists. On my taking leave, he presented me with several curious Specimens; and a quantity of Seeds of rare plants, which I distributed on my return home...[2140]

Barton continued to seize every opportunity to obtain seeds and plants from Calcutta. Dr. Lawton, the "young man of merit," remains without further identification, but we know that Barton's presentation copies were safely delivered.[2141] Mr. Davy in the following letter was perhaps associated with commercial shipping; for in April 1810 Barton wrote again to Roxburgh:

Dear Sir,

Mr. Davy has been so very polite as to give me an opportunity of writing to you. I embrace it with pleasure, though I have to regret that I have little important to send you.

2138 Bangalore intended. *Dalbergia sisso*, or Indian Rosewood, named by Roxburgh, reaches 80 feet. It is the most widely cultivated tree in India, next to teak. Teak, *Tectona grandis* L. f., did not "naturalize" in our climate.

2139 Darlington, Letterbook, West Chester State College Library, West Chester, Pennsylvania.

2140 Darlington papers, correspondence with various persons, volume 4, West Chester State College Library, West Chester, Pennsylvania.

2141 Anonymous, *Catalogue, Library, Botanic Garden* (Calcutta, 1832).

Last Spring I wrote to you about Dr. Lawton, by whom I sent a few small publications. At the same time, I took the liberty of requesting you to furnish me, if possible, with some of your live plants. Dr. L. has not yet returned. By Mr. Davy, who has manifested the great politness to be of use to me, and who has also called for my attentions to you, an excellent opportunity will be afforded for conveying to me a few living plants, should Dr. Lawton not have received any from you; & for sending a few which Dr L. may not have in his collection. Be assured that I shall at some future period, make suitable return. My present collection of living plants is small.

By Mr. Davy I send a copy of my Medical and Physical journal. I am dear sir, with very great respect, Your obedient &c B.S. Barton[2142]

[a copy]

Roxburgh continued his friendly correspondence with Barton, mentioning the hazards of plant transportation. Dr. Carson, botanical intercessor from Philadelphia, and probably also a ship's surgeon, visited the Company's garden in 1811, and exchanged packets of seeds. This Carson may have been the son of John Carson (1752–1794), M.D. Edinburgh, 1776.[2143] Roxburgh wrote:

Calcutta October 12 1811

Dear Sir

I have left myself no time to thank you for your letter of 18th Decr. by Dr. Carson, who has this instant called to tell me he is on his way down the River to join his vessel, I have not therefore time to do more than thank you for your fine seeds of Fraxinus Ornus, which unfortunately have not vegetated, & to send you a packet of seeds collected in this Garden. We daily look for ships from Philadelphia, by them I hope to have my letters &c. from my good correspondents there. I am dear Sir Your most obed. & Hble serv.

W. Roxburgh

Rec'd May 20 1812

favor of Dr. Carson[2144]

Barton also sought seeds from Italy. Shortly after the death of a favorite pupil, Thomas Walmsley, the brother, William H. Walmsley of Byberry, Pennsylvania, "honorably engaged in commercial pursuits," travelled to Florence bearing a letter from Barton to Professor Ottaviano Targioni-Tozzetti (1755–1829),[2145] then professor of botany and director of the botanical garden at the University of Pisa. Walmsley delivered a characteristic gift, copies of five of Barton's tracts: two of *Discourse*, two of *Facts relative to the Opossum*, and one *Account of Siren lacertina*. With ambitions for his growing library he had also instructed Walmsley to search for wanted titles. Barton seemed unaware of Castiglioni's having taken American plants to Italy in 1787, and the publication of his *Viagio negli Stati dell' America Settentrionalis...* (Milan, 1790, 2 vols.).[2146] He wrote to Professor Targioni-Tozzetti on 25 June 1809:

I am very anxious to have a small collection of some of the finest seeds of Italy, in return for which I shall not fail to transmit to you some

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2142 Barton papers, HSP.

2143 See *Pennsylvania Mag.* 67 (1943): 1–29, and Carson scrapbooks, CPSP.

2144 Barton papers, APS.

2145 *TL-2.*

2146 See Pace, *Castiglioni.*

American seeds. Let me know what you wish for in this way. I need not say, that my native country is extremely rich in plants, many of which, it is highly probable have not yet reached Italy. I have, for several years, been engaged in writing an extensive work on the vegetables of the United States, a part of which is already printed off.

Please to inform me, if the abbé [Francesco Saverio] *Clavigero, the author of the 'History of Mexico' be still living. I am, Sir, with great respect Your obedient servant, &c*

P.S. I have the first fasciculus of Mr. Scopoli's 'Deliciae Florae et Faunae insubricae'[2147] *and am very anxious to obtain the remainder of the work. You will oblige me muchly giving Mr. Walmsley some directions as to the bookseller from whom he will be most likely to obtain that portion of the work which I have not got. The part which I possess contains 25 plates, and 85 pages, and was printed at Pavia in 1786.*

exact copy[2148]

Of Florence and Professor Targioni-Tozzetti we learn some features from James Edward Smith, who had arrived in Florence in January 1787. He visited museums, galleries, and understandably the botanical garden, in which he found a greenhouse, but no stove: "the plants are fine, though not numerous."[2149] An immense *Dracaena draco* "with the gum called Dragon's Blood exuding most copiously" had impressed the English visitor. He met Targioni-Tozzetti, whose father, Giovanni, had also been a physician and had published on his travels in Tuscany. After Florence, the son was director of the botanical garden at Pisa from 1807 until 1829. "Likewise a physician he is a man of the most amazing simplicity, modesty, and benevolence of manners, worthy to be the heir of the amiable Micheli,"[2150] whose curiosities had been purchased by his father. Walmsley was successful in his mission, for Scopoli's *Deliciae*, three volumes bound in one, is in Barton's library at Pennsylvania Hospital.

A source of Egyptian plants became possible when in 1804 Barton was visited by Alire Raffeneau-Delile (1778–1850),[2151] born in Versailles. Delile, whose education had been interrupted by the Revolution, was influenced by Desfontaines[2152] of the Jardin des Plantes in Paris to join as botanist with Bonaparte's expeditionary force to Egypt, 1798–1801. He was put in charge of the Cairo botanic garden, from which he collected specimens. Back in Paris, and unemployed, he remembered that Ambassador Jefferson had encouraged him to visit the United States, and so he accepted an assignment as French vice-consul and commissioner for commercial relations. Delile arrived in Wilmington, North Carolina, in April 1803, lived there for about two years, studying plants in the area, and on one occasion botanized with François Michaux on a trip to the mountains. Delile found the city boring, endured a hurricane, and in a fire lost half of his possessions. Dispirited he applied unsuccessfully to be transferred to Philadelphia. That denied, he accepted employment at Pennsylvania Hospital, perhaps through Barton's assistance, and he may have audited a few lectures. He found Barton "interesting," and "botany flourishing."

While on a botanizing trip along the Hudson near Hosack's country home, Hosack noticed him, and, impressed with his interest in and knowledge of plants, and learning of his

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2147 Joannes Antonio Scopoli (1723–1788), *Deliciae Florae et Faunae Insubricae* (Pavia, 1786 [–1788], 3 vols.).

2148 Ewan, "Barton's library," PH; Pritzel, *Thesaurus*, 8558; *TL-2*. Barton papers, APS.

2149 Smith, *Tour*, 1: 315; Gager, "*Botanic Gardens*," 243.

2150 Pier Antonio Micheli (1679–1737), "Father of cryptogamy," had been curator of the botanical garden at Florence. *TL-2*.

2151 Jean Motte in *DSB*, and Motte, "Delile," 53–82, portr.; *TL-2*.

2152 Auguste Chevalier, *L'Vie et l'Oeuvre de René Desfontaines, Foundateur de l'Herbier du Muséum, la Carrière d'un Savant sous la Revolution* (Paris, 1939), portraits. *TL-2*.

aspirations and financial difficulties, took him into his home.[2153] There John Wakefield Francis, medical pupil, was also living. Delile was thus enabled to enter medical school at Columbia, taking his degree in 1807. While still in the area he botanized again with Michaux in the vicinity of Newark, New Jersey.

In September of 1806 Delile wrote to the French Minister of the Interior requesting permission to return to France as he wished to complete his flora of Egypt.[2154] He left the United States for France soon after commencement and practiced medicine until 1814. He then was appointed a professor at the University of Montpellier, where he remained until his death. In 1820 he succeeded de Candolle as Director of the Botanic Garden at Montpellier. He worked for a time enlarging and revising Michaux's classic *Flora* with the view of bringing out a new edition. His heavily annotated copy is preserved at Montpellier. In 1808 Delile sent Egyptian plants to Barton, these specimens now at the Academy of Natural Science in Philadelphia.[2155]

Shortly after Delile's visit in 1804 Barton wrote to Pierre Broussonet[2156] at Montpellier on 28 January 1805 and sent a copy of his *Collections*. He wished to establish correspondence with him—surely encouraged by Delile—and would exchange seeds of the United States plants for those of southern France.[2157] Broussonet may have suffered his stroke about the time of Barton's letter.

Barton had met a succession of French botanists, sometimes on return visits. Palisot de Beauvois had come in 1792; André Michaux in 1794; and the artists Pierre Antoine Poiteau in 1801, Pierre Turpin the next year. There had been the exciting visit of Humboldt and Bonpland in 1804. So when Jean Baptiste Louis Théodore Leschenault de la Tour (1773–1826),[2158] who had seen "more of the West Australian vegetation than any earlier investigator and even more than Robert Brown," came for a visit in early 1807, Barton must have been delighted. Leschenault had accompanied Nicholas Baudin on the exploration of the Australian coasts. Characteristically natural history had been supercargo to a geographic survey at the behest of Napoleon, who did not wish to see the British or Dutch gaining supremacy in that corner of the world. Leschenault had fallen ill on the expedition and had been left at Timor in June 1803. He had botanized in Java after his recovery, and in 1806 sailed from Batavia for America, likely as a passenger on one of the many merchant ships plying between southeast Asia and our Atlantic ports. He arrived in Philadelphia early in 1807, and left for France in July. During the spring Pursh and John Lyon were in the city, and surely such an alert botanist as Leschenault would have visited Hamilton's "Woodlands."

Also on the Baudin expedition was Charles Alexander Lesueur (1778–1848),[2159] whose drawings of marine invertebrates remain among the most beautifully detailed in that genre. Was it Lesueur's treasured drawing of "Aquarium siticus" that Leschenault showed to Barton? Years later, after Barton's death, Lesueur was to accompany Maclure to describe and draw the fishes of the Mississippi River drainage to the Gulf of Mexico.

2153 Robbins, *Hosack*, 73–74; Austin, *Imprints*, 167; *TL-2*; Laseque, *Musée*, 202 et passim.

2154 *Description de l'Égypte...Histoire Naturelle*. Tom. Seconde (Paris, 1813–1826), *Flore d'Égypte* is the title of the second fascicle; see *TL-2*.

2155 Mears, "Collectors," 149.

2156 Pierre Marie Augusta Broussonet (1761–1807), ichthyologist and botanist who collected in the Canary Islands, 300 plant specimens in the de Candolle Herbarium. He became curator at Montpellier, reviving the botanic garden. Bashford Dean and Charles Rochester Eastman, *A Bibliography of Fishes* (New York, 1916–1923), lists 10 titles, 1780–1803; J. Motte, *DSB*; *TL-2*.

2157 Barton correspondence, f. 78, HSP.

2158 Leschenault, passim, in Jacqueline Bonnemains, Elliott Forsyth, and Bernard Smith, eds., *Baudin in Australian Waters, The Artwork of the French Voyage of Discovery to the Southern Lands, 1800–1804* (Melbourne & New York, 1988); Barbara Mearns and Richard Mearns, *Biographies for Birdwatchers: the lives of those commemorated in Western Palearctic bird names* (London & San Diego, 1988), 231–235, portrait; J. Eugène Deschamps in *Nouv. Biog. Gén.* (1859), 30: 923–927; *TL-2*. Handwriting: *Candollea* 31 (1976), 329–330.

2159 David Starr Jordan in *DAB*; John Wells in *DSB*.

Barton supplied Leschenault with seeds of value for the agriculture of Mauritius, and Leschenault expressed his gratitude for Barton's attentions while he was in Philadelphia by nominating him for membership in the Société d'Emulation de l'Ile de France, his certificate dated 17 November 1807.[2160] Specimens of a few cryptogams from Leschenault are preserved in the Academy of Natural Sciences in Philadelphia, probably sent to Barton at the time of the Société's honor.[2161]

While in Philadelphia, Leschenault and Delile had taken lodgings together, and it is recorded that they assayed various ways of preparing the American bullfrog for the table.

During Leschenault's visit, Barton learned of his having observed the European yellow wood sorrel in Australia.[2162] The worldwide distribution of certain plants, whether by agency of man, ocean currents, or birds—disjunct populations, are today still critically studied. After Leschenault's visit Barton wrote a memo, undated, probably intended for use in a lecture:

> *Some plants are diffused almost all over the earth. Neither with respect to these is there any reason to believe that man, has had any thing to do in their distribution. Such plants are the following.* Samolus valerandi the Water Pimpernel]. *This is native of almost all the countries of Europe. It is a native of Asia. Whether it be found in Africa I know not. In America it is a common plant, neither is it confined to the shores of our continent. It inhabits the interior of the country, & has even taken possession of the summits of our mountains. I have myself observed it on the Blue-Ridge in Virginia; and I have received specimens of it from the summit of the Salt Pond Mountain, one of the highest and most secluded peaks of Virginia. I am surprised that Willdenow p. 385 should say, that Samolus valerandi never occurs except on the shore of the sea, & in the vicinity of salt-rivers. The places which I have mentioned are at a great distance from salt water. But over in Europe it inhabits salt less mountains. Few plants are more widely diffused than Oxalis acetosella. Mr. Leschenault informed me, that he found it in N*[ew] *Holland, to all appearances native.*[2163]

Not only does the German botanist Carl Ludwig Willdenow associate *Samolus* with saline habitats, but the usual comment today is "wet places, especially near the sea, locally common...Cosmopolitan."[2164] Willdenow is remembered for his influence on his pupil Humboldt and on the growth of plant geography. He confirmed dioecism in plants by hand pollinating a pistillate European Fan palm, *Chamaerops humilis*, with pollen from another plant growing in the Leipzig Botanic Garden.

From Guatemala came a promise of exchanges from Alejandro Ramirez, but on 30 August 1811 he wrote Barton of the difficulties of transportation due to political turbulence within the country, and so it is doubtful that anything came for the garden.[2165]

From the West Indies Barton desired not only plants for his garden and greenhouse, but also information on minerals and the Carib Indians. For these he turned to an acquaintance from his university days at Edinburgh, William Lockhead (17??-1815),[2166] who had some medical training and was assistant superintendent at St. Vincent Botanic Garden, where he

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2160 Barton papers, APS.

2161 Mears, "Collections," 156; Van Steenis, *Cyclopedia*, 321.

2162 Ridley, *Dispersal*, 654, gives 1802 as the first date for *Oxalis corniculata* L. in Australia. The weed's explosive capsules favor dispersal.

2163 Barton papers, APS.

2164 A. R. Clapham, T. G. Tutin, and E. F. Warburg, *Flora of the British Isles*, ed. 2 (Cambridge, England, 1962), 636.

2165 Barton papers, APS.

2166 Desmond, *Dictionary*.

succeeded his superior, Dr. Alexander Anderson. They had worked together as early as 1792. In 1802 Dr. Anderson had written Sir Joseph Banks that Lockhead, a good botanist, involved himself in politics to the detriment of botany.[2167] Barton wrote to Lockhead at St. Vincent in August 1813, in part:

> *A very few days ago, I accidently heard...you are alive, and at St. Vincents. Previous to this, I had not, for many years, heard a word of you. I had supposed you dead.*
>
> *I think you will not have much difficulty in recollecting the writer of this letter. You knew him at Edinburgh, and some letters passed between us, after my return to America. You are now situated in a place in which you may, without much trouble to yourself, render me some services, and with this view I take the liberty of calling upon you.*
>
> *In the first place, then, I shall be grateful to you for seeds of any of the plants of St. Vincents, or the adjacent continent, but especially such as are distinguished for their beauty, usefulness in medicine, & the hardier the better: though I have a green house. It is possible, that in better times than the present, you may occasionally send me, at my expense, a few plants in the growing state.*
>
> *2dly Specimens of minerals, volcanic, &c I have a cabinet, and am aspiring to enlarge it. It is already one of the best in the country."*[2168]
>
> *3rdly Specimens of any of the Indian Languages of your parts of America. You will easily conceive what now I wish for. If you succeed in collecting any, let me know your* [method?] *of writing them. I have already published a work on Indian languages, and have collected materials for a much larger work, a part of which, is printed off.*
>
> *4thly Any facts related to the physical appearance, viz. complexion, form, size, &c of the ancient inhabitants.*
>
> *Do, I beg you, let me know how I may be of use to you. I can send you plants for the B. garden, books, &c I mean not my own books: for they are hardly worth your notice.*
>
> *By the death of Dr. Rush, I have lately received a new appointment in our University: that of Professor of the Practice of Physic, of the Institutions of Medicine, &c adieu, & believe, as Newton* [signed?], *Your sincere friend,*
>
> *Benjamin Smith Barton*
> *copy*[2169]

We have found no reply. Nineteen original drawings of West Indian plants by Lockhead are preserved in The Natural History Museum (London), probably originally sent to Banks.[2170] After Lockhead's death 22 March 1815 he was succeeded by George Caley the following year. Staffing tropical posts was a perennial problem, because of endemic diseases.

Another contact for foreign seed for Barton's botanic garden came from Dr. Samuel Brown (1769–1830),[2171] born in Rockbridge County, Virginia, graduate of Dickinson College at twenty, and private pupil of Rush. He attended medical school at Edinburgh but took his medical degree at Aberdeen in 1796. He carried his medical enthusiasm to Bladensburg,

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2167 Dawson, *Banks Letters*, 19, and under Wm. Wright, 882.

2168 Enriched with Godon's specimens purchased in 1812.

2169 Barton papers, APS.

2170 Sawyer, *Drawings*, 154; Guilding, *St. Vincent*, 16, 18, 221; Urban, *Antillanae*, uncharacteristically overlooked Lockhead.

2171 James M. Phalen in *DSB*.

Maryland, and Lexington, Kentucky, where he was living when elected to the American Philosophical Society in 1800. He moved to New Orleans practicing, from 1806 until 1809, the city with occasional visitors from Mexico. After a move to Huntsville, Alabama, in about 1819 he assumed a position on the medical faculty at Transylvania College in Lexington, Kentucky, remaining until 1825. He corresponded with Jefferson from 1805 until 1824, sending him information and comment on such topics as the beauty of the native Coral Bean, *Erythrina herbacea*, and seed of chick peas and Guinea grass.

Brown's letter introduced a possible new correspondent: Don Vicente Cervantes (1755-1829), a native of Extremadura, Spain, who taught courses in botany at the garden in the Palacio Real in Mexico City from 1791 until sometime after 1820. He was associated with Don Martin de Sessé y Lacasta, first Director of the Royal Botanical Expedition to New Spain and the Garden in Mexico City, which had been designed to carry forward the work of Francisco Hernandez. The Expedition, staffed by Sessé, Mociño (or Meziño), Longinos, Sansevé, and Castillo, botanized across Mexico from 1788 until 1803.[2172] The seeds and specimens collected would have supplied the source Don Cervantes drew upon to send to Dr. Brown.

New Orleans, March 27th [1808]

My dear Sir,

Don Vincente Cervantes Professor of Botany in the Royal Botanical Garden at Mexico has transmitted to one of my friends in this City the seeds of more than two hundred Plants among which are six or seven new Genera & more than one hundred & fifty new species. It gives me great pleasure to inform you that I have procured for you a share of this valuable collection which will, I hope, give additional pleasure to those who cultivate Botanical knowledge under your direction & perhaps furnish to our Country some articles of importance in the healing art. No person with whom I am acquainted, is so likely to make a proper use of these seeds as yourself & should I ever have the satisfaction of visiting your City again I flatter myself that I shall find many of these Mexican strangers—these children of the sun, naturalized by your fostering care, & flourishing in your northern clime—In addition to the seeds, Cervantes has sent to this place a Box of Bulbous Roots, which we shall endeavour to cultivate in our Gardens & should we succeed, next spring, I shall furnish you with specimens. In order to preserve the seeds & secure the growth of the Plants we have distributed them among those gentlemen who will probably pay the strictest attention to their culture but we rely principally on you—The catalogue herewith transmitted to you has been hastily & very inaccurately printed. Should the plants flourish you may find it necessary to change many of the names & perhaps identify them with species formerly known. I could wish that a correspondence could be established between you & Cervantes as you are both engaged successfully in the same useful & pleasing studies. Should you think proper to address any letters to that gentlemen I could forward them pretty regularly from this place & it would give me great satisfaction to serve you—

I shall apply to Cervantes for a complete collection of all the Gramina known in Mexico for Dr Muhlenbergh who I am informed has been indefatigable in his researches in that Genus of Plants.

Some months ago I transmitted to the Philo. Society a Box of Mexican ores. I have not learned whether it was recd or not.

2172 Engstrand, *Spanish Scientists*, passim.

> *Should my much admired friends Mrs Sergenat & Mrs Waters still continue to amuse themselves with the cultivation of Flowers I pray you to present them, in my name, with some of the finest in this Mexican collection–*
>
> *With sentiments of great Regard & affection I am Dr Sir Yrs v. tr. Sam Brown*
>
> *Received May 27th 1808*
>
> [Addressed to] *University*[2173]

The identity of the "gentlemen" in New Orleans who evidently received the seeds and bulbs may only be conjectured. Madam Paillet, who resided at 29 Rue de Chartres, associated with the collecting of the fungus *Cordyceps*,[2174] or Dr. Robert Dow,[2175] a Scot, who had contacts with the botanist John Bradbury, may have been Dr. Brown's friend. The "catalogue" referred to appears not to have survived. Mrs. Sergeant and Mrs. Waters were the daughters of David Rittenhouse, and so Barton's cousins.

Barton in a letter of April 1810 offers to send "seeds of any of the vegetables [meaning plants] of the United States," to G. H. von Langsdorf[2176] in St. Petersburg through the Russian consul in Philadelphia, Mr. Dashkov. In return Barton asked:

> *Would be convenient for you, Sir, to furnish me with seeds and bulbs of some of your more elegant and useful vegetables, especially those from the more temperate and southern parts of the empire? Any such would be highly acceptable to me. Seeds of your Shrubs, and bulbs of your lilies, Tulips, Fritillaries, &c, would be most acceptable, especially if the latter were procured from the wild situations. I learn from Pallas, that the south of Russia is very rich in the fine Hexandrous plants. I am very anxious to see Lilium Camschatcense.*[2177]

Langsdorf answered Barton's letter in 1812, not mentioning Barton's request for seeds and bulbs, and then again in December of 1813, this time from Rio de Janeiro. He had collected some fern specimens and, though he was more interested in butterflies, offered to exchange dried plants.

Barton had now succeeded to the chair of the Theory and Practice of Medicine, was in declining health, and was preparing for his trip to Europe. Correspondence concerning the Botanic Garden ceased. On Barton's death the greenhouse and garden equipment were sold with the house. His nephew, W. P. C. Barton, may well have removed some of the more exotic plants to the garden he nurtured for a while on the Pennsylvania Hospital grounds. And were there among these some exotics Barton had rescued from William Hamilton's declining garden? Of his garden Barton had commented to Salisbury in late 1809:

> *Your Magnolia conspicua* [Salisb.] *has flowered, in very great perfection, in my Viridanicum. It is, indeed, a noble shrub. Your drawing of this species is not one of the best in the 'Paradisus.' Paeonia moutan, as*

2173 Barton papers, APS.

2174 Ewan, "Louisiana Bibliography."

2175 Duffy, *Louisiana*, Vol. 1, passim.

2176 Georg Heinrich von Langsdorff (1774–1852) (in these letters spelled with one "f") was then between his years with the Krusenstern expedition, 1803–1806, as surgeon-naturalist, and as Russian consul in Brazil. *TL-2*. His report of the expedition is *Bemerkungen auf einer Reise um die Welt in den Jahren 1803 bis 1807* (Frankfurt-am-Main, 1812).

2177 Barton papers, APS, a copy. [Now *Fritillaria camschatensis* (L.) Ker Gawl. IPNI.]

it is called,[2178] *I possess very fine specimens of, and I hope to have flowers this coming spring.*[2179]

2178 A Chinese species is figured in Sims, *Bot. Mag.* 1154.
2179 Barton papers, APS.

Chapter XIX

Hortus Siccus: Barton's Efforts to Build a Herbarium

Barton understood that to produce a meaningful flora would call for a comprehensive collection of native plants, living and dried: living in order to study attributes and peculiarities, dried to assemble a herbarium that might be used again and again for comparison of an unknown with a known.

Barton did not become an innovator of concepts of plant classification. Indeed, his acceptance, although with criticism, of the Linnaean sexual system, at that time challenged abroad by the Natural System of Jussieu, was a practical decision, just as later it was for Nuttall when publishing his *Genera* in 1818. Nor was Barton out of step in his allegiance to Linnaeus. Barton's reasons were like those of Jefferson, who wrote in 1814 in answer to Dr. John Manners when pressed as why he did not take up Jussieu's system then being discussed:

> *I adhere to the Linnaean because it is sufficient as a groundwork; admits of supplementary insertions, as new productions are discovered, and mainly because it has got into so general use that it will not be easy to displace it." He listed three advantages offered by the Linnaean system: firstly, of aiding the memory to retain a knowledge of plants, secondly, "of rallying all to the same names for the same objects, so that* [one] *could communicate understandingly on them," and, thirdly, of enabling the inquirer to trace an unknown by its characters "up to the conventional name by which it was agreed to be called."*[2180]

Barton found while teaching medical pupils wrestling with materia medica that by counting stamens and pistils, and assigning a specimen to a class, it was an aid in identification, but he vouchsafed now and then "that we must look for something better than the sexual system." With these words he wrote 29 November 1809 to the British botanist R. A. Salisbury (1761–1829):

> *Has any Jeffersonia* [Figure 79] *yet flowered in England? as it is unquestionably, a new genus, I hope the English botanists will retain the name. I could easily send the seed of this plant, but it is seldom that they vegetate unless when planted very soon after they leave the capsule. This plant belongs to the order Papaveraceae, and must stand next to Sanguinaria. The number of its stamens is various; but that is a matter of small importance; for I agree with you, that we must look for something better than the sexual system.—You are rendering an important service to the science of your country in bringing the system of Jussieu into notice.*[2181]

Because of its stamen count, *Franklinia* also presented problems of early classification. Why, except in deference to a senior recognized botanist would he have used the name *Lacathea*?

2180 Quoted in *Bull. Pacific Trop. Bot. Gard.* 1 (2) (1971): 6–7.

2181 Barton papers, APS.

> *I readily agree with you, that the Franklinia is not a Gardenia, and I do not object to your name of Lacathea. But I wish you could have consented to have retained the name Franklinia as a trivial or specific apellation. Franklin was not, indeed, a botanist: but he was a zealous patron of all the sciences in his native country; and it is a fact, not known to you perhaps, that he was very instrumental in bringing John Bartram, the discoverer of the Lacathea, into notice both at home and abroad. I grant, however, that Lacathea Franklinia would not sound as well as L. flavida. It is a curious fact hitherto, we have discovered the plant in question in only one place, near Fort Barrington, in Georgia. In my Geographical View of the Trees and Shrubs of N. America, no vegetable will occupy so sparce a place, or range, as Lacathea, one excepted the Cheiridendron, or Hand-tree of The Mexicans,–although Gardenia Lasianthus*[2182] *grows very far to the north of Lacathea, it will not bear, with us at least, so great a degree of cold. It will not bear the open air of a Philadelphia winter, which Lacathea does very well.*
>
> [Then telling Salisbury of the projected appearance of his "Flora" he returned to a favorite theme:] *Our mountains, especially the northern parts of the United States, are rich in the plants of Asia and Europe. As we go to the northern west, we come to the plants, and also to many of the animals of Eastern Asia. No botanist more than yourself knows how to value such facts as these.*

Benjamin Waterhouse, (1754–1846) writing from Cambridge, Massachusetts, to James Edward Smith 24 July 1811, stated his problem of a system to teach by:

> *As I was the first who gave lectures on Natural History in America, I was obliged to give* [the Linnaean theme] *popular dress...I found I must excite a taste, & then try to gratify it. Our elder brethren in Europe, know not the difficulties that the first settlers in science have to encounter.*[2183]

Barton also knew the difficulties. To stimulate an interest he had initiated his American Linnaean Society. He addressed the members in 1807:

> *My own American Herbarium contains several hundred species of North American plants more than are contained in the whole Flora of Michaux. Through the kindness of my friends and pupils, I am continually receiving accessions to the list. The history of my whole collection is intended for the public. Indeed, I have already made considerable progress in describing plants.*

One eighth of the flora east of the Mississippi River, he wrote, was "entirely unknown." He had been active in his study of plants, for in 1795 Judge John Davis had visited Barton in his "bachelor quarters" and admired the twenty-five bound volumes of specimens that comprised Barton's herbarium at that time. The only two surviving volumes are housed at the Academy of Natural Sciences in Philadelphia.[2184] These two volumes, 14 × 9 inches in boards, three-quarter leather, contain plants both named and unnamed, with and without data, and interleaved with thin blotting papers for pressing the specimens, some of which are pasted on,

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2182 [There is a *Lacathea florida* described by Salisbury, 1806, in the Rutaceae. "*Gardenia Lasianthus*" probably indicates *Gordonia lasianthus* (L.) J. Ellis, the southeastern Loblolly Bay in the Theaceae. IPNI. ITIS.]

2183 J. E. Smith correspondence, 10, f. 121, Linnean Society, London.

2184 Barton, *Discourse* (1807), 40–41.

some now taped. The front leaf of one volume is labeled "Class ii, Diandria Monogyniae." Contributors are identified. A few examples from Volume One:

> *Glaux. Saltwort.*
> *Glaux maritime*
> *Sea milkwort. Black Saltwort.*
> *Collected by Mr. Andrew Michaux, in the Salt-water of the River St. Lawrence, in 1792.*
> *Monarda didyma* [Scarlet beebalm] *Collected by Mr. John Adlum,*[2185] *who says it is 'common in the richs bottoms in all the back country,' and 'that by some it is called balm of Gilead...'*
> *Salvia coccinea* [Blood Sage] *From Bartram's Garden.*
> *Trillium cernuum. This specimen was presented to me by Mr. William Bartram who collected it near his brother's farm.*
> *Verbena hastata* [*Vervain*] *I collected this specimen in a meadow near Mr John Bartram's house...BSB.*
> *Polygonum. I collected this specimen in a very wet situation, about a mile from Mr. John Bartram's house, near the Schulkill. There was a considerable quantity of the plant growing together. It was in flower. BSB.*
> *Saxifraga nivalis* [Alpine Saxifrage]. *Collected in Lancaster County, by Matthias Barton, Esq.*
> *Tilia pubescens. See Hort. Kewen. Vol 2. p. 229. Collected by Jonathan Williams, Esqr. upon the summit of Blue-Ridge about fifteen miles from Staunton in Augusta County, Virginia, in June 1791. N.B. This is Tilia caroliniana, or Carolinian oblique leaved Lime Tree, of Marshall. See his Arbustum Americanum, p. 154.*[2186]
> *Corydalis? Presented to me by the Reverend Mr. H. Muhlenberg, who collected it in Lancaster County.*
> *Hypericum mutilum? I collected this specimen near Mr. Bartram's house. It is a common plant. BSB.*

The fate of the remaining volumes and whatever detail they contained remains unknown. The second surviving volume contained fewer data.

> *Linnaea borealis. Northern Linnaea Presented to me by the Reverend Dr Menasseh Cutler, who collected it in the State of Massachusetts. 'It is a common plant in the State of Vermont.'*
> *Mr. Andrew Michaux.*
> *Arabis lyrata?* [Lyrate Rockcress] *Collected near Grey's Ferry, where it is a very common plant.*

2185 John Adlum (1759–1836), soldier during the Revolution, surveyor and engineer, and viticulturist. From 1795–1798 he was associate judge in Lycoming County, Pennsylvania, and about this time became acquainted with Barton and with Priestley. About 1800 he established his own experimental farm in Georgetown, D.C., having been unsuccessful in his attempt to gain government financial support, to cultivate American grapes. He popularized the Catawba. Liberty Hyde Bailey, *Standard Cyclopedia of Horticulture*, ed. 2 (New York, 1928 printing, 3 vol.), 1563, portrait, and "John Adlum and the Catawba," *Sketch of the Evolution of our Native Fruits*, ed. 3 (New York, 1911), 50–61, portrait frontispiece; illustration of *Adlumia* Raf., Fumariaceae, on p. 51. Barnhardt, "Barton," 36; Edward H. Jenkins in *DAB*.

2186 [Both *Tilia caroliniana* Mill., 1768, and *T. pubescens* Aiton, 1789, synonymize to the earlier name *Tilia americana* L., 1753, the American Basswood. IPNI. ITIS.]

Our oldest herbaria to remain in the United States for study by American botanists were those of Muhlenberg and Barton.[2187] Although descriptions of North American plants appeared in European publications in the late sixteenth century, dried (herbarium) specimens were not preserved until a century later. John Banister's 340 or so specimens, collected 1678–1692, were studied in England, and their descriptions published 1688–1704 by John Ray; in 1699 by Jacob Bobart the Younger for Robert Morison; and 1691–1705 by Leonard Plukenet, each giving his own Latin phrase name. Half a hundred Banister drawings were published by Plukenet in his *Opera*. Johann Gronovius had the opportunity, with Linnaeus's assistance, of publishing (1739) phrase names for the fine collection of John Clayton, Clerk of Gloucester County, Virginia. Ray labored over the disappointingly incomplete collections of Jones and Vernon, and Krieg's specimens from Maryland.[2188] The published accounts and these specimens with those of Mark Catesby from the Carolinas, Peter Kalm, and John Bartram's from New Jersey and Pennsylvania, and William Bartram's from his Florida trip, were to be the basis for most eastern American plant binomials appearing in Linnaeus's *Species Plantarum*. Some of Banister's and Catesby's specimens are in the Sherardian Herbarium at Oxford; Banister's, Jones's, Vernon's, Krieg's, and Bartram's are in The Natural History Museum, London; and Clayton's and Kalm's are in the Linnean Society Herbarium, London.

It was 1788 before plant collections made in the middle Atlantic States remained in the United States. Even so these American specimens were largely ignored by American authors for another half century.

The Reverend (Gotthilf) Henry Ernest Muhlenberg (1753–1815),[2189] Lutheran minister of Lancaster, Pennsylvania, and president of Franklin College there from 1787, collected most of his plants himself, his herbarium serving as the basis of his checklist of a Pennsylvania local flora, the manuscript of which was presented to the American Philosophical Society in 1785. By 1791 Muhlenberg had 1100 nominal species preserved in his herbarium. An account was published in the Society's *Transactions* in Volumes 3 and 4 (1793, 1799) under the title "Flora Lancastriensis," and eventually in Lancaster as his *Catalogus* in 1813.

Although Muhlenberg took pains to verify his identifications through a voluminous correspondence with European colleagues, a correspondence conducted for the most part in fine German script, his work has largely been ignored. Nuttall and Torrey have been among the few, after Muhlenberg's death in 1815, who were prompted to verify a critical specimen.

Muhlenberg's herbarium was first moved to the American Philosophical Society's rooms, then in 1898 it was placed "on deposit" at the Society in the Academy of Natural Sciences across town. During the move many labels were lost or mixed. Undoubtedly inattention to Muhlenberg's herbarium, which in fact is an important treasure of botanical information, was due to questions on the validity and utility of his proposed names; or because of the brief, often arcane information on labels, whether his original, or transcribed after the move from the Society to the Academy. Such mix-ups or losses resulted in disregard of his specimens over the years, despite their pivotal importance.

Barton's much smaller herbarium, 1674 specimens, about one third the size of Muhlenberg's, the second to be created in the first decade of the Republic, was intended to provide background for his composing a handbook of the North American flora to exceed in number of species and area Michaux's *Flora*. Despite his own collecting, his financing of Pursh and Nuttall to collect for him, his acquisition of the Lewis and Clark plants, specimens sent him by his many correspondents, and his frequently expressed enthusiasm and intentions, Barton did not achieve his goal. His herbarium, like Muhlenberg's, was little noticed until, in

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2187 John Bartram's specimens preserved at the Sutro Library, San Francisco, were first publicized in 1970. Four photographs of Bartram specimens were published in *Anonymous, From Seed to Flower*, 16. See Ewan, "Philadelphia Heritage," 1–2, and Elizabeth McLean, *Bartonia* 51 (1984): 36–39.

2188 Ewan & Ewan, *Banister*, 111–114. For D. C. Solander's role see J. L. Reveal, *Bartonia* 51 (1985): 80–92.

2189 Mears, "Muhlenberg," passim; George H. Genzmer in *DAB*.

the twentieth century, Francis Pennell, through his scholarly study, called attention to its very existence, its contents, and the persons involved in its creation.

Besides making his own modest gatherings locally, on his trip to Niagara Falls, and on several trips to Virginia and New Jersey, Barton encouraged his medical students to forward plants from their home precincts or their eventual professional localities. Dr. Gray of Southampton, Virginia, contributed seventy-one specimens; Dr. David Thomas of Susquehanna, Pennsylvania, fifty-eight; and Drs. Beasley, Shryock, and Horsfield, forty-one, twenty-five, and twenty specimens, respectively.[2190] More importantly, Pursh's collections from southern Virginia to northern New York, financed with Barton's funds, meager as they were, became a critical component in Barton's herbarium (and duplicates or snippets for Pursh's *Flora*!).

As with Muhlenberg, some of the specimens once destined for Barton cannot be found today. Barton's student, William Baldwin, after his voyage of internship as ship's surgeon, delivered some Chinese plants to his mentor in 1805. Baldwin wrote, "specimens of them, with a great many others, (as well as native plants) principally uniques, are safe in the hands of Dr. Barton."[2191] Thomas Meehan and Elliott Coues aroused an interest in the Society's horde, when they sought the Lewis and Clark vouchers to document that expedition's narrative.

Barton's herbarium included twenty-seven Australian plants collected by John White, sent from London by James Edward Smith. Smith wrote from Hammersmith on 27 May 1796 that he was sending certain of his writings and some dried specimens from New South Wales in return for publications of the American Philosophical Society that Barton had sent him.[2192] In 1791 from Stockholm came Anders Sparrman's suggestion that books and specimens be exchanged. Sparrman had joined Cook's Second Voyage at Cape Town en route to the South Pacific with the Forsters.

Years after Barton's death, Russian collections intended for him reached von Schweinitz, who was actively building his own herbarium.

Just when Barton met Muhlenberg is not certain, but it could have been on visits to his brother Matthias, also interested in natural history, or to his sister Esther (Mrs. Paul Zantzinger), soon after Muhlenberg accepted the pastorate in Lancaster in 1780. Shortly he became the beloved president of Franklin College. Educated in Germany, he had a degree from the University of Halle in 1770. Back in Philadelphia he at first assisted his father, and during the Revolutionary War had ample opportunity to devote time to botany. In 1783 he had a visit from Johann David Schoepf (1752–1800), German physician and naturalist of "wit and serene good temper," who had served with the British Army during the War and was then touring the country.[2193] Under Schoepf's influence Muhlenberg began a correspondence with European botanists, a number of whom Barton would also contact, and exchanged plant specimens with Acharius, Aiton, Persoon, H. A. Schrader, J. C. D. von Schreber, Swartz, and Willdenow. Willdenow included a number of Muhlenberg's new species in his edition of Linnaeus, *Species Plantarum*.[2194] James Edward Smith was one of Muhlenberg's few English correspondents.

By 1791 Muhlenberg had cataloged 1100 species of plants growing in the vicinity of Lancaster, sending specimens, named and unnamed, to correspondents. His pioneer interest in mosses, algae—these cryptogamous plants—and grasses and sedges, filled a gap left vacant by other botanists of his period in this country. Of all plantsmen, who would know the liverwort *Porella*? Muhlenberg was that man, and so Barton turned to him, writing from Philadelphia 23 February 1794:

2190 See Barnhart, "Barton," for an early analysis.

2191 Darlington, *Baldwin*, 31.

2192 Joan Appelbaum, *Taxon* 25 (May 1976): 331–334.

2193 Schoepf, *Travels*. G. H. Genzmer in *DAB. TL-2*.

2194 Ed. 4 (Berlin, 1797–1825, 6 vols.), completed after Willdenow's death.

Reverend Sir,

Our good friend Mr. Wm. Bartram has lately discovered near his house, within the tide-influence of the Schuylkill a curious plant, which I take to be Porella pinnata. He tells me, he has transmitted a specimen of it to you. What is your opinion concerning this plant? Have you found it in Lancaster County?—A few days since, I received a letter from Dr. Cutler. He tells me he will write to you soon.—

From 1792 when Barton wrote "He is a most worthy man" to 1801 when Muhlenberg's commemorative name *Bartonia*[2195] was published, relations were going quite well. Their differences seemed to stem mainly from their attitudes toward literature. Muhlenberg on visits to Philadelphia would want to use one or more of Barton's treasures. He had told Rush one day on the street that his father had "taught him not to buy a large library, but to read the book of Nature and to record every fact and thought I heard of, or that occurred in my own mind. He told me that he had done so and found immense benefit from it. He said he kept one book for facts, and one for opinions."[2196] Barton's bibliography was antithetical. Barton also had not taken Muhlenberg's advice on concentrating on his own area of Philadelphia: Barton spread wide. Muhlenberg wrote to William Bartram, longtime friend, on 8 October 1792:

How does our friend Doctor Barton do? He will find it a very difficult task to write a complete Flora Pennsylvanica at this time: and I wish I could persuade him to take only his neighborhood. Delaware, Schuylkill, the near parts of the Jerseys, will take a number of years to have all their plants well and satisfactorily described.[2197]

On 12 November 1792 Muhlenberg wrote to Cutler, with whom he had established a correspondence sometime before. After deploring the possible loss of letters, and hoping to renew contact, he expressed his feelings about botany and Barton's plans:

...Pardon an Enthusiasm for a science which has given me so many pleasant hours, and which I know you cultivate with great success. Botany wants your assistance, and when you have spread a full table, let me have some of the Fragments...Let each one of our American Botanists do something, and soon the riches of America will be known. Let Michaux describe South Carolina and Georgia; Kramsch, North Carolina; Greenway, Virginia and Maryland; Barton Jersey, Delaware, and the lower parts of Pennsylvania; Bartram, Marshall, Muhlenberg, their Neighborhood; Mitchill, New York, and You, with the northern Botanists, your States—how much would be done! If then, one of our younger Companions (I mention Dr. Barton, in particular, whose business it is) would collect the different Floras in one, how pleasing to the botanical world! We could exchange our plantas adversarias with one another, and in a short time all would be perfect. I have written to pretty near all the mentioned Gentlemen on this Head, and hope to receive their concurrence. Pray let me have your opinion on this subject.[2198]

Through the years Muhlenberg welcomed exchanges and information with the Americans mentioned in the letter above, but his publications were in the main catalogs of his

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2195 [*Bartonia*, Gentianaceae; *B. tenella* Muhl. ex Willd. 1801. IPNI. TROPICOS.]

2196 Corner, *Rush*, 184.

2197 Darlington, *Memorials*, 471.

2198 Cutler, *Life*, 2: 291.

observations, his newly discovered species were published mostly as *nomina nuda*, his documentation incomplete. Barton, devoted to his medical pupils and of necessity to his practice, saw his input and his influence over American botany dwindle year by year as Michaux, Muhlenberg, Elliott, and eventually Pursh, put material into print. Was he concerned that Muhlenberg sent specimens of new species to be made known to the world by Willdenow in his edition of *Species Plantarum* (1797)—in Europe and not in America? Muhlenberg in his letters to American botanists showed great personal warmth. His meetings with visitors were more relaxed and leisurely as he exhibited and discussed his specimens. Barton's coolness toward Muhlenberg, which Muhlenberg portrays in his letters to friends, contributed markedly toward Barton's reputation as stingy of time and assistance, self-seeking, and asking more than he was willing to give.

Barton's approach was more scientific and greatly influenced by European authors. Although his field excursions covered a far wider area than Muhlenberg, he was also interested in the historic record of who had made the first collection of a species—of what was back of the citations given by Linnaeus in his *Systema Naturae*, ed. 9 (Leiden, 1756) or *Species Plantarum*. His publication of his flora was delayed for his acquiring Gronovius's *Flora Virginica* and Plukenet's *Opera*, delayed so that multifarious activities meant that most of his botanical work would remain in manuscript. Meanwhile, there was the need for a botany textbook and a materia medica text for his pupils, and so for a time he concentrated on these.

There was little correspondence between them, but each visited the other, when Barton was in Lancaster visiting relatives, or Muhlenberg in Philadelphia visiting him. Muhlenberg complained to Peck in 1812 that Barton wrote only to acquire information from him and seldom gave any. When one considers the record of Barton's activities with the American Philosophical Society, his devotion to his medical pupils and their research, and his medical practice, it is perhaps understandable that he did not want to linger in conversation with his friend of such different perspective. What we know of their association comes almost only from Muhlenberg's letters to other botanists over the years.

Barton carried an announcement of Muhlenberg's *Descriptio uberior Plantarum Lancastriensis* in his *Philadelphia Medical and Physical Journal*,[2199] referring to his correspondent as "already well known to the public as an able botanist." Due to difficulties in getting an enthusiastic publisher for a work of this sort, the *Descriptio* did not see print.[2200] There is this friendly letter about grass specimens, comments on Michaux's *Flora*, Rafinesque and his characteristic ambitions, Mr. Enslen and Mr. Van der Schot. Muhlenberg wrote Barton 29 August 1805:

> *Sir*
>
> *I thank You for the Sight of the Grasses and shall be happy to see more, especially from other States. My opinion I give as far as the Nature of the Specimens will allow:*
>
> 1. *Panicum heterophyllum Schreberi 2 specim.*
> 2. *Juncus campestris L.*[2201]
> 3. *Poa stolonifera Haller's*
> 4. *the same*

2199 *PMPJ* 2 (1805) pt. 1: 178.

2200 Though a synopsis appeared in *Trans. Amer. Philos. Soc.*, the principal work was never published. See E. D. Merrill and S. Hu, *Bartonia* 25 (1949): 16; C. E. Smith, Jr., *Proc. Amer. Philos. Soc.* 106 (1962): 445; and Mears, "Muhlenberg," 155. His *Catalogus* (1813) is in Sabin, *Dictionary*, no. 51248.

2201 [Now the Woodrush, *Cyperella campestris* (L.) MacMill., 1892. IPNI. ITIS.]

5. *Festuca elatior L.? the Specimen imperfect*
6. *Milium effusum L. is it really a native?* [American Millet]
7. *Panicum crus galli L.*[2202]
8. *Cyperus for which I have no Name yet. I have it now in my Garden for a nearer examination*
9. *Panicum crus galli as 7—the hispid Variety or Cospecies.*
10. *Aira flexuosa L.*[2203]
11. *Panicum latifolium L.*[2204]

Michaux' flora I have seen, but could not get it for my own, though I have written to France and Germany for it. He has described a great Number of Grasses with new Names. It will take close study to be certain which Plants he meant. His Dilepyrum[2205] *comes very near to Muhlenbergia Schreberi. If his Description is exact they still differ.*

From Mr. Rafinesque I received a Letter mentioning that he intends publishing this Year a Supplement of about 700 Plants omitted in Michaux as a Prodromus I suppose to his Flora Americana. He desires all my Descriptions of such Plants which are not in Michaux, good Specimens with some more et cetera's. If he doth, we will have a Deal of Work to clear away the Rubbish cast upon the American Flora. He mentions that he gave You a Flora of Delaware and Columbia District to publish in Your botanical Magazine containing 700 and (I forget the Number exactly Say) 1200 different Plants, and that I was to have a Copy, for which Copy I should do him the Favour to—Pray what is this Flora?

I have done very little this Year for Botany, perhaps 2 new Sonchi [the Sow thistle, *Sonchus*] *or 2 Species of Prenanthes, and a Glycine may be added to my Index. My Georgia Seeds from Enslin miscarried. Mr. Enslin is now I suppose amongst the Osage Indians, what Mr. Van der Schott has discovered in his Travels beyond the Ohio I have not heard. I remain with great Esteem Sir, Your sincere Friend*

Aug. 29. 1805 H. Muhlenberg
Received Sept. 4, 1805.[2206]

After Muhlenberg established fraternal correspondence with Stephen Elliott[2207] of Charleston, South Carolina, his reflections on Barton were passed along 27 August 1810:

Our botanical friends here are still alive. D. Barton was lately with me. He is now publishing the first volume of his Flora from Monandria—octandria, grasses excepted which he leaves untouched. By what I have seen in Ms it will be a good work some Rubbish excepted which he takes

---

2202 [*Echinochloa crus-galli* (L.) P. Beauv., Barnyard Grass. IPNI. ITIS.]

2203 [Now *Deschampsia flexuosa* (L.) Trin., Wavyhair Grass. IPNI. ITIS.]

2204 [*Dichanthelium latifolium* (L.) Gould & C. A. Clark, Broadleaf Rosette Grass. IPNI. ITIS.]

2205 [*Dilepyrum* Raf., referred now to *Oryzopsis* Michx., the Wild Rice Grass. IPNI. ITIS.]

2206 Barton papers, APS. We found no evidence that Aloysius Enslen travelled beyond New Orleans on his southern journey. Barton did not publish the flora that Rafinesque submitted.

2207 Stephen Elliott (1771–1830), born Beaufort, South Carolina; graduated Yale College, 1791, returned to Beaufort as a planter, but moved to Charleston in 1812 as a banker and co-founder of what today is known as the Charleston Museum, where his plant specimens are kept. Amy R. Childs in *DAB*. A correspondent of Muhlenberg's from 1808 until Muhlenberg's death in 1815, "from a high regard for his many virtues, his liberal temper and exemplary character," Elliott dedicated his *Sketch of the Botany of South Carolina and Georgia* (Charleston, S.C., 1821–1824, 2 vols., facsimile, Joseph Ewan, ed., New York, 1971) to Muhlenberg; Stafleu, *Taxon* 21 (1972): 689–691; *TL-2*; George A. Rogers, "Stephen Elliott, a southern humanist," in *The Humanist and his World*, Barbara W. Bitter and Frederick K. Sanders, eds. (Greenwood, S.C., 1976), 116–133.

> *from old books out of date. He sent a young gentleman* [Nuttall] *on his own expence to the North–and westward to collect plants who has not yet returned. Much is expected from him. I believe an excursion through the Jersies would give by far more.*[2208]

Sometime during the fall of 1810 Muhlenberg called on Barton and had the thrill of examining Abbot's and Smith *Rarer Lepidopterous Insects of Georgia*[2209] as Barton turned the pages. Judging from his long letter to Barton, Muhlenberg had been denied an extended view since he requested that Barton transcribe the plant names that appeared on the plates. He complained to Stephen Elliott "Did you ever see Abbots Insects fig[ures] with Smith's observations on the plants? D. Barton has the superb work, but is overcautious in Showing it."[2210] His request, made to Barton from Lancaster, 1 November 1810 read:

> *Dear Sir*
>
> *A safe Opportunity happening for Philadelphia, I embrace it to return You my sincere Thanks for the friendly Attention You paid to me at my last visit: Abbot['s Insects have often been in my Mind and I have tried to remember the many Plants figured in so superb a Stile, but I feel my Memory is a going fast. Can't You persuade one of Your numerous Students to copy the Names of the Plants figured with their Numbers? You would do me a particular Favour. only a few Names T. 38, 7, 101, 21, 47, 62, 19, 20, 86. 14. 103. 56, 58, 59. 77. 78. 79. 5. 94. 102. And I would wish to have the Rest. The Spermacoce hyssopifolia I take to be the Spermacoce diodina*[2211] *Michaux and the Diodia virginica Gärtner. Pray compare Gärtners Figure, which does not agree with the other Diodia. I had the Plant alive in my Garden, it flowered Sept. 10. and had a reddish Corolla, then I took it for Spermacoce diodina. A very similar Plant I found at Baltimore but caule procumbent. Capsula calice 2 diphyllo coronata that I took for the Claytonian Diodia. Corolla was alba and caerulea. Of Diodia I have in my Herbarium 2 other species one is Your Diodia virgin. the other I suppose tetragona Walter.*[2212]
>
> *Since I saw Lyon's Commelina and the one figured in Abbot['s Insects I am more in Doubt than before. Willdenow takes the one You have seen with me for the real caroliniana Walter* [Carolina Dayflower]*; the other of Mr. Lyon is very different from my Plant, is it communis Walter, and what is then the C. figured in Abbot['s Insects?*
>
> *The [Quaking] Grass You gave me is different from all the Briza's of Linne, which I have in my Herbarium. As far as the Specimen without any Leaf goes, it answers to Br. canadensis of Michaux. I will thank you very much for a full Specimen. I still want a Number of Michaux's Grasses and wish very much to see them in my Herbarium. Amongst others I want Eriophorum hudsonianum* [Michx.], *Schoenus about 4 species, Fuirens* [*sic, Fuirena*] *scirpoidea* [Michx.], *Alopecurus aristulatus*[2213] [Michx.], *Phalaris villosa*[2214] [Michx.], *Paspalum praecox* [Walter] *and plicatulum,*

2208 AA.

2209 *The Natural History of the Rarer Lepidopterous Insects of Georgia...collected from the observations of Mr. John Abbot...by James Edward Smith* (London, 1797, 2 vols., 104 plates).

2210 Letter of 1 Feb. 1811. AA.

2211 [Also recognized today as *Dioda teres* Walter, Rough Buttonweed. IPNI. ITIS.]

2212 [Both names synonymize to *Dioda virginica* L., Virginia Buttonweed. IPNI. ITIS.]

2213 [Now *Alopecurus aequalis* Sobol., Short-awn Meadow-foxtail Grass. IPNI. ITIS.]

2214 [Now referred to *Anthaenantia villosa* (Michx.) P. Beauv., Green Silkyscale Grass. IPNI. ITIS.]

Tripsacum cylindricum[2215] [Michx.], *Aira melicoides*,[2216] *Festuca diandra* [Festuca Grass], *poaeoides, and polystachia* [*sic polystachya*], *Avena mollis* [oats], *Ariata*, *Zizania miliacea*[2217] *and fluitans*.[2218] *Should any of these be amongst Your Collections I would thank you very much for a Specimen, even only for the Sight. The Rest I have and about 130 more, not mentioned by Michaux. Whenever You will be pleased to let me see Your Grassis according to Your kind Promise, I hope to get a fine Supplement and certainly the inventor and Donor will get his Due. Summ. cui que.*

Perhaps Mr. Musser, the Bearer of this would be a very safe Opportunity to bring a Collection of Grasses along and the Enchiridion of Persoon which I am used to have near at Hand. I would be glad to hear Your Opinion and Observations on this Enchiridion. Mr. Persoon complained much to me that it was unsaleable. Certainly there is multum in parvo.[2219]

I had allmost forgotten to mention to You where the Walteriana [ined.] *of Smith according to D. Smith was to be found in Abbots Insects, he mentioned Numb. T. 68.*[2220] *Mr. Lyon, has great Merit in American Botany, and if it is the Plant without Name, certainly his Name might be kept. I send it to D Smith as Lyonia and had the Plant from D. Brickell and Enslin before I saw it at Mr Hamiltons and Mr. Lyons. After my visit to You I made a small Excursion in the Jersies and was much pleased with a great Number of Plants not to be found in Pennsylvania. A Flora of the Jersies would take in many Carolina Plants. Have you the Crotonopsis Mich. from the Jersies?*

By 'this' Time I suppose the young Gentelman You sent to the Westward will return. I wish good Success to his Travels, and wish to see the Discoveries published soon. How is it with Lewis's Travels, will we soon have them in Print? and is there a fine Plant reserved for his Name? I find that we have a Fuchsia lycioides from West America allready in the European Gardens, is she among Lewis's Plants? Mr. Lewis was too good to give so many Seeds to Mrs. Merry, we shall see them figured and named I am afraid before Travels are published, in some one of the British b. Magazines[.]

Your Lectures have began, I therefore must not intrude any longer on Your Patience. May the Allmighty preserve Your Health. With great Respect and unchangeable Friendship I remain dear sir Your Most obed. humble Servant

Henry Muhlenberg

P.S.

As much room is left I beg leave to mention more N. American Plants of which a Specimen is still wanting in my Herbarium. If You give me a list of those wanting in Your Herbarium we perhaps can make a use full Exchange." [There follows a list of 53 plants].

2215 [Recently recognized as *Muesithea cylindrica* (Michx.) de Koning & Sosef, Poaceae. IPNI.]

2216 [Currently known as *Trisetum melicoides* (Michx.) Vassey ex Schribn., Purple False Oats. IPNI. ITIS.]

2217 [Michaux's *Zizania miliacea* referred later to *Zizaniopsis miliacea* (Michx.) Doell & Ascherson, the Giant Cutgrass. IPNI. ITIS.]

2218 [Michaux's *Zizania fluitans* moved to *Luziola fluitans* (Michx.) Terrell & H. Rob., the Southern Water Grass. IPNI. ITIS. TROPICOS.]

2219 *Synopsis Plantarum seu Enchiridium Botanicum*... (Paris, 1805-1807, 2 vols.). Descriptive phrase "multum in parvo" is appropriate. *TL-2.*

2220 *Walteriana*, also called in early literature *Mylocaryum ligustrinum* Willd., 1809, is *Cliftonia monophylla* (Lam.) Britton & Sarg., Buckwheat Tree. Harper, *Bartram's Travels*, 625; Ewan, *Bartram*, 51, etc.; Ewan, "Lyon," 22.

> *When you find Persoon please to add Frölick de Gentiana.*[2221] *So far I had written, when the first Volume of Persoon was handed to me in good Order. You are wellcome to the 2d. Volume for the desired Time. H. M. Nov. 3*
>
> *I enclose fresh seeds of Acacia* [*Desmanthus*] *brachyloba and Spiraea stipulata Willd.*[2222]

Muhlenberg was seriously concerned, as was Jefferson, that the discoveries of Lewis and Clark in the West would be published in Europe before they could be appropriately announced at home. Mrs. Anthony Merry,[2223] wife of the British minister to the United States, 1803–1806, represented one such crack in the American defenses. Aside from Mrs. Merry there was her friend Rev. Manassah Cutler, correspondent of the banker-botanist Dawson Turner of Great Yarmouth, Norfolk, in Muhlenberg's circle of friends. Delay in publication of the results of the Lewis and Clark Expedition distressed the Philadelphia fraternity.

However, Muhlenberg's mention of *Fuchsia lycioides* from "West America" relates to a confusion of labels. We may only wonder where he learned of the *Fuchsia* report, but again it indicates Muhlenberg's wide attention to botanical literature. The British botanical artist and engraver, Henry C. Andrews, published a colored plate of *Fuchsia lycioides* in *The Botanists' Repository* in 1800,[2224] drawn from a flowering plant in the Knightsbridge nursery of John Kennedy. The *Fuchsia* had been brought back, not by the Lewis and Clark Expedition, but by Archibald Menzies, surgeon-naturalist on Vancouver's voyage around the world, 1791–1795. The *Fuchsia* had been mistakenly tagged as from the "Northwest Coast," where indeed Menzies had botanized, but this introduction surely had been collected in the vicinity of Valparaiso, Chile.[2225]

Barton had been very ill that summer of 1810. His neglect to answer added to Muhlenberg's growing negative feeling toward Barton: that he asked more than he gave. This Muhlenberg expressed, mentioning his feelings of apprehension about the coming War of 1812, in a letter of 1 February 1811 to Stephen Elliott:

> *I have not yet received, nor any answer, to a number of letters I wrote to Europe last spring. I fear our Intercourse will be long stopped, and we must do as well as we can. Perhaps we can help ourselves, if only Naturalists would join. I have tried since New Year to animate a Number of my former correspondents but without much success. D. Barton hardly ever answers and when a letter comes it contains nothing but queries. W. Hamilton is still alive but very very weak. Mr. Lyons is well. One new correspondent I gained Doctor Baldwin* [of] *Wilmington Delaware St*[ate] *who promises fairly to send me the new plants of Delaware which are numerous.*

Muhlenberg alerted Baldwin that year that "At Savannah you will have an opportunity to see that excellent man, Mr. Abbott [Abbot],—whose drawings of Georgia Insects and Plants, are so justly admired. I wish to have your opinion on the new drawings he has made for the

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2221 Joseph Aloys von Frölich (1766–1801). Pritzel, *Thesaurus*, no. 3131. *TL-2*.

2222 [Indian Physic, recognized as *Gillenia stipulata* (Muhl. ex Willd.) in W. P. C. Barton, *Veg. Mater. Med. U.S.* 1: 71. 1817. Later shifted to *Porteranthus stipulatus* (Muhl. ex Willd.) Britton, 1894. IPNI. ITIS.]

2223 Malcolm Lester, *Anthony Merry Redivivus...* (Charlottesville, Va., 1978), 83.

2224 *Bot. Repos.* 2 (1800): pl. 120. Its introduction correctly attributed to Menzies in 1796 in *Bot. Mag.* 25 (1807): 1024.

2225 Philip A. Munz, *Proc. Calif. Acad. Sci.*, ser. 4, 5 (1943): 69–70. Also introduced by Menzies was *Mimulus aurantiacus*, Sticky Monkey Flower (Figure 55), the provenance of which was lost but recovered by what may be Barton's drawing.

library, at Savannah."[2226] Baldwin was impressed, especially with the later drawings that had received the suggestions of the "more scientific Oemler," and are "equally beautiful and scientifically accurate."[2227]

Again Muhlenberg wrote to Elliott:

> *In the beginning of May I was at Philadelphia for a few days and had the pleasure to see my excellent friend Zaccheus Collins, Mr Lyon and his nursery, D. Barton and with the valuable works of Plukenet...Plukenet pleased me much and figures many of our plants exactly. I examined him in particular for our Smilaces* [a list of Smilax species followed]. *D. Barton is in good health. He mentions that another American genus belonging to Icosandria is named after him. 4 species were discovered on the Rocky Mountains in Western America.*[2228]

Barton's herbarium was not to be seen. Barton had been informed from London that Pursh had in print the name *Bartonia* for a specimen Nuttall had collected in the West and had generously shown him.[2229] Nuttall already had the name in manuscript honoring his former patron and was chagrined that Pursh had pre-empted the name. Barton's elation may well be imagined. He would not live long enough to learn that instead of the especially beautiful and conspicuous *Mentzelia*, by which botanists know the genus today, *Bartonia* now denominates the inconspicuous gentian named earlier by Muhlenberg and published in Germany.

Pressing ahead with his botany, Muhlenberg confided to Baldwin:

> *My Catalogue is now in Gynandra–going very slow–. You will find much to add, but a beginning must be made. Dr. B. will have an opportunity to criticize. If only the science grows, I am satisfied.*[2230]

Again to Elliott 14 January 1813, Muhlenberg wrote:

> *I have seen* [plants figured in Abbot's Natural History of the Rarer Lepidopterous Insects of Georgia], *but with only a half a look at D. Barton's. he did not seem willing to let me have a copy of the Names and Numbers.*

He wrote again 6 December:

> *I have seen some* [specimens of algae] *at a distance with D. Barton from the Northward which were excellent and of great Consequence. The Doctor could never be persuaded to allow a nearer look, and this spring told me they were moth eaten not worth seeing or* [had been] *sent to Europe.*

To Baldwin, Muhlenberg had written 20 April:

2226 Darlington, *Baldwin*, 52.

2227 Darlington, *Baldwin*, 151.

2228 Elliott-Muhlenberg correspondence, HUH.

2229 [Pursh's name in Loacaceae, *Bartonia decapetala*, would be published in *Bot. Mag.* 36, t. 1487, in 1812. However, the genus name was already occupied by Muhlenberg's *Bartonia* (1801) in the Gentianaceae, *Bartonia decapetala* instead served as basionym to *Mentzelia decapetala* (Pursh) Urban & Gilg in Engler & Prantl, *Nat. Pflanzenfam.* iii, ba, 111 (1894). IPNI. TROPICOS.]

2230 Darlington, *Baldwin*, 86.

> *Dr. Barton, it seems, has published the first 8 classes of his Flora,—but has sent all his copies to England; and none are left for the American Botanists, who want a Flora most. My Catalogue has lain two years with the printer, W. Hamilton; and, after all my spurring, is printed to Monodelphia. He will only print 400 copies, for fear of losing too much.* [Then, after other botanical news, in a postscript he added:]
>
> *Directly after my visit to Philadelphia, I will do myself the pleasure to write you a long letter,—with every information I can get, there from Corrêa, Collins, Bartram (John is dead, William still alive) M'Mahon, Lyon, and others. W. Hamilton* [of the "Woodlands"], *I hear, is alive,—but lost to Science. Whether I shall find our other friend Dr. B. at home, or in a humour to speak upon the science, I do not know.*

Muhlenberg's *Catalogus* (dated 3 August 1813), which in the preface he referred to as "*multum in parvo*," had been written in 1809, printing begun in November 1812, and finished at the latter end of July 1813. In it Muhlenberg acknowledged twenty-eight American "Friends and Correspondents" including Barton, Brickell, Elliott, Enslen, and Hamilton.

Muhlenberg complained to Elliott 25 Aug. 1813:

> *In all the public Libraries at Philadelphia there is not one on the Ferns with figures! The unhappy war* [with England] *hinders me from getting books or specimens from Europe. In the meantime I will try to collect from our own Parts whatever I can get. My Friend D. Barton would not let me see any of his Specimens 'they were too much in disorder and not fit to be seen.'*

Once more in his letter to Elliott 6 December 1813, Muhlenberg pressed his faith in scientific cooperation, with reference to his Philadelphia friend:

> *Would it not be well if you would give to the Public an Index or Catalogue of all the Carolina and Georgia plants in the same or better manner than mine (my Catalogue) is? I wish that Walter* [Flora Caroliniana] *might be explained in particular. My next wish is that a similar Catalogue might be published to the Northward by Drs Peck, Bigelow, Cutler or some other communicating Botanist, who is free from Jealousy and Nostrums, By joining of Hands we may do something clever.*[2231]

It may have been, when Cutler visited Muhlenberg in Lancaster while enroute on business for the Ohio Company, that Muhlenberg recommended he meet young Barton when he visited Philadelphia.

Sometime, it may have been shortly after Barton's return to Philadelphia in 1789, and in 1791, the Reverend Manasseh Cutler (1742-1823) of Massachusetts visited Philadelphia and Barton. A graduate of Yale in 1765, Cutler at first practiced law, then theology, and was ordained in 1771 as a Congregational minister, preaching first in Dedham, Massachusetts. In 1787 he spent four months between New York and Philadelphia on business for the newly formed Ohio Land Company. He signed a contract for the Company for one and a half million acres of land at about eight cents an acre, thus opening up settlement of Ohio, and the establishment of Marietta.[2232] He was fascinated by the flora of the regions he traveled through,

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2231 HUH.

2232 Cutler, *Life*; Blazier, *Cutler*. Many Cutler letters were destroyed in a fire in 1812, remaining letters at Marietta College, Ohio. Claude M. Fuess in *DAB*. Cutler's letter to Barton was read at a meeting of the APS 2 Nov. 1792. He had been elected a member in 1784, although it is not recorded in the "Minutes."

and visited the Indian mounds at Muskingum, of special interest to Barton. Barton hoped for an enthusiastic correspondent, and not hearing from this busy man, wrote to Cutler 22 September 1792, "I had flattered myself that letters would occasionally pass between us, and in thus flattering myself I had promised myself a good deal of happiness." He had been pleased to see Volume III of Belknap's *History of New Hampshire*[2233] with its plant lore, and he requests plant exchanges with Cutler. He also enclosed a few copies of his *Proposals* to publish on the "Remains of Antiquity," which he hoped it would be no trouble for Cutler to pass on to printers in the area. Included also was "Our common friend, Dr. Muhlenberg, of Lancaster, often inquires after you. He is a most worthy man." He requested a copy of Cutler's paper on the plants of New England (1785), an account with the local common names. Barton acknowledged the response 31 August [1792?], which Cutler noted as "Rec'd 18th Feby. '93," thanking Cutler for his paper and for the first volume of the *Memoirs of the American Academy* (1785), and for Cutler's observations of the mounds at Muskingum, for which he hoped to publish a plate in his work on ancient remains. He offered to send information for the new edition of Jedediah Morse's *Geography*, and suggested that Cutler keep the three volumes of Aiton's *Hortus Kewensis* (London, 1789, 3 vols.), which Barton had loaned him, until he had finished with them. And he asked whether Cutler knows anything of the "Round horned Elk."[2234]

Before he had received Barton's letter of thanks, Cutler had written telling again of delivery uncertainties. Volume one (1785) of *Memoirs of the American Academy* had contained Cutler's "An Account of the vegetable Productions" of his area. Trees growing on the mounds near Marietta would, Barton hoped, indicate the age of the "ancient monuments." The "Podophyllum diphyllum" Barton would christen *Jeffersonia*, and Cutler complained of the difficulty of keeping his specimens in order and available, a problem that plagued Barton. Barton's *Proposals* was his request for support for publication of what he eventually titled *New Views*. Cutler's letter from Ipswich, 19 November 1792, reads:

> *My Dear Sir*
>
> *I had not ye happiness to receive your favor of Sept 22nd untill yesterday. It had probably been some time in ye post office wh is 4 miles from me. After my return from Philada ye last of May my time was incessantly occupied in bringing to a close ye troublesome business wh had detained me so long there, untill within a few weeks past. Some time in ye last of August or beginning of Sept I put on board Capt Needham of Salem, a package for you. He then expected to sail for Philada in a few days, but I have since been informed that he did not sail untill ye last of Sept. In this package I sent you ye 1st Vol. of Memr. Amera. Academy in wh a bot paper of mine was published–specimens of Linnaea borealis* [American Twinflower], *& I believe one or two other specimens, but was so pressed for time that it was not in my power to look over my specimens to select such as I wished to send you. I also sent you ye observations I made at Marietta on ye Trees, with some remarks on those antient works. This package you will have, I hope, received long before this time. I desired Capt Needham to deliver it with his own hand, or request Mr. Anthony & Son, merchants, with whom he had business to transact, to forward it immediately. If you should not have received it I will beg you to inquire of them. Capt. Needham was to discharge his cargo of barley at a Brewery near ye bottom of Vine Street. As I had not had time to read a single page in ye books you were very obliging as to lend me, I am lured to*

2233 Jeremy Belknap, *The History of the State of New Hampshire* (Boston, 1784–1792, 3 vols.).

2234 Cutler, *Life* 2: 287–290. [American Elk, *Cervus elaphus* L., 1758. MSW.]

detain them a little longer but will embrace ye 1st opp[ortunity] *to send them.*

Of Quercus pumila, Juglans cin[erea], *Pinus larix, Panax trifolium, Cliffortia trifol. I have no specimen but of ye Ribes nig*[ram] *& Grosul., nig*[rum][2235] *Vaccinium oxy*[coccus, the Small Cranberry] *& delicatula I have specimens. They will be too bulky to send by post but will forward them with a number of others by ye first vessel from Salem. The Qu*[ercus] *pumila*[2236] *is a low shrub, common among pines particularly ye Pinus taeda, on dry sandy or rocky plains & barron hills. We have many species or varieties of Juglans wh are very imperfectly or not at all described by Linnaeus.*[2237] *I am much in doubt whether ye leaves of those wh grow native with us ought to be employed in specific characters. Their general form is similar in all of them, but ye number of ye pinnae vary in ye same species. I have found from 3 to 9 or perhaps 11 on ye same tree. Will not ye fruit afford much better characters? The Pinus larix is a very common tree in this vicinity—grows in swamps or in a cold moist soil natural to ye Kalmia angustifol. I have seen ye Panax trifol. growing only in ye western country, but ye root collected in ye northern part of Massachusetts & N. Hampshire appear to be of ye same species. What ye plant is wh Dr. Belknap calls Poke I am unable to determine. He is confident it is an evergreen wh has led me to suspect it may be ye Arbutus uva ursi*[2238] *as I have found it in a similar situation. This is not a vine tho its manner of growth bears so near a resemblance that ye mistake might be easily made by an incautious observer. Cliffortia trifol.*[2239] *is a Thalictrum dioeca* [*sic, dioecum,* Meadowrue]. *He took ye Linnaeus name from my bo*[tanical] *paper where I had erroneously called it a Cliffortia but had since detected ye error. The next season I hope to be able to furnish you with all ye species you have requested, & will endevour to pay a particular attention to them.*

The Podophyllum peltatum or diphyllum[2240] *I have not found nor have I heard of their being employed as a medicine. I will be much obliged to you for specimens of both or either of them.*

Please to present my most respectful compliments to our good friend Mr. Muhlenburgh when you see or write to him. I hope to embrace ye first oppy. to write to him myself.

It is with much regret that I hear of ye death of J. A. Murray, of wh I had not been informed untill I received your letter. The loss of so great a character must be lamented by every man of science. To me it is particularly affecting as he had honored me with a correspondence highly instructive and entertaining.[2241]

The 2nd vol. of ye Mem of ye Amn Academy would have been in ye press long ago had it not been for some untoward events which prevented.

2235 [*Grossularia nigra* refers to *Ribes nigrum* L., European Black Currant. IPNI. ITIS.]

2236 [*Quercus pumila* Walter, the Running Oak, is a shrub 1–2 meters tall, from similar habitat. IPNI. ITIS.]

2237 What Cutler called "*Juglans*" are now distinguished as species or hybrids of *Carya*, first separated by Nuttall in 1818.

2238 Poke [*Phytolacca* L.] and kinnikinick, though unrelated, have soft black fruits. Cutler called poke "shoke."

2239 Though *Cliffortia*, a rosaceous shrub of South Africa, known to M'Mahon as a greenhouse plant, is inconceivably related to the Meadow rue, *Thalictrum*, Cutler aligned basswood, *Tilia*, with the tropical achiote, *Bixa* orellana, in 1785.]

2240 [*Jeffersonia diphylla* (L.) Pers. IPNI.]

2241 Johann Andreas Murray (1740–1791) of Göttingen, a devoted disciple of Linnaeus. "His botanical work was not of very high [quality], later influence negligible" (Stafleu, 1971). *TL-2.*

I believe it is about to be put into ye hands of ye Printers. There have been no elections since my return from Philda.

If you have any specimens of grasses–Melanthium virg. [Virginia Bunchflower, not a grass], *Rhexia virg, Azalia nudiflora, Uvularia, Vaccinium, Prunus pennsylv. or virg., Clematis virg., Rhinanthus virg.,*[2242] *Scrophularia mariland.,*[2243] *Medicago* [*Lespedeza*] *virg., Hyoseris virg.,*[2244] *Juniperus sabina, Acer or Salix, that you can part with I will be much obliged to you for them, or any other rare plants.*

My specimens are at present so much in a chaotic state that I cannot readily turn to such as I wish to find. As soon as I can possibly find leisure, I shall place them in a vegetable cabinet wh have lately been provided for that purpose, & as I work them over, will select a number for you, & forward them as soon as possible.

In ye mean time I will thank you to write soon & as often as you can find it convenient. I am with ye most sincere esteem, Dear Sir Your much obliged friend & very humble servt

M Cutler

P.S. I will pay particular attention to your proposals. One of ye papers I have sent today to a friend in Boston, who I doubt not will obtain a number of subscriptions.[2245]

Luigi Castiglioni, Italian visitor to the United States 1785–1787, who had also been a visitor to Bartram's and Hamilton's gardens, but who missed Barton, then in Europe, delighted in meeting Cutler. He remembered "an incredible pleasure upon finding in America one who dedicated himself with so much intelligence to the delightful study of natural history."[2246]

Through Cutler Barton contacted Jeremy Belknap (1744–1798),[2247] Harvard graduate in 1762, Congregational minister, first in Dover, New Hampshire, 1766–1786, then in Boston from 1787. While in Dover he had begun his three volume *History of the State of New Hampshire* (Boston, 1784–1792), which in volume three contained a general discussion of the native trees and shrubs of New England. Belknap was seeking enthusiastic contributors to the publications of his newly founded American Academy of Arts and Science in Boston. On 30 January 1793 Barton was elected a Fellow, and Belknap sent a copy of Daniel Gookin, *Historical Collections of the Indians of New England* (1792),[2248] having received Barton's *Proposals* for his projected work on Indian remains. Barton's letter of thanks, carried by a current visitor to Philadelphia, Samuel P. Morse, also discusses differences of opinion with Gookin, and with Belknap's conclusions in his *History* that *Apis mellifera* was native. On reading that, Barton had been inspired to deliver a paper before the American Philosophical Society 1 February 1792, published in 1793, stating that the honeybee was not a native. Barton's letter to Belknap dated 28 August 1793 reads:

Revd. Sir, I have received your polite letter, together with a copy of Gookin's Historical Collections. Thank you for your kind attention to me. I have read enough of the book to be convinced that it will be of use to me,

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2242 [*Rhinanthus virginianus* L., now *Aureolaria virginica* (L.) Pennell, the Downy Yellow False Foxglove. IPNI. ITIS.]

2243 [Now *Scrophularia nodosa* var. *marilandica* (L.) A. Gray, Woodland Figwort. IPNI. ITIS.]

2244 [*Krigia virginica* (L.) Willd., Virgina Dwarf Dandelion. IPNI. ITIS.]

2245 Barton papers, APS.

2246 Pace, *Castiglioni*, 26.

2247 Lawrence S. Mayo in *DAB*.

2248 Ewan, "Barton's Library"; Sabin, *Dictionary*, 27959.

and to find that I have been wrong in what I have said on the subject of the Natics and Nahantics. Yet, I do suppose, that these two people do, or did, speak dialects of the same language. Captain Hendricks, of the Mohegans, settled at Oneida, informed me, that the Nahantics speak a dialect of the language of his nation. Of the natics he knew nothing; but it is easy to discover, by consulting Mr. Eliot's Bible, that this last-mentioned people must have been of the Mohegan-stock.

At this time, when oppressed by a multiplicity of business, I have not leisure to answer, as I could wish, your objection to my paper on the honey-bee—Indeed, I have not, at present an opportunity of examining your paper on the subject; so that the remark which you refer to, in p. 120 & 121, I must leave unnoticed, until some future period. I know, we are both desirous of learning the truth; and it is not without our reach. I only received your letter yesterday, and I have hardly time to answer it. Mr. Morse will deliver this into your hands.

The present state of my work, on the subject of the Americans, you may know something about from Mr. Morse. I have, still, some months of time to receive and to examine facts and circumstances relative to my principal objects. Whatever you may think proper to communicate to me, I shall consider it as a pleasing duty to acknowledge, in a public manner...

It is my anxious wish, that our acquaintance should increase. Whilst at a distance an occasional letter from you may remind me, that in the pursuits of science I have long been ambitious of treading in the path in which you walk, with honour to yourself, and with benefit to your country, and to science. Should you visit our city, I hope, you will let me have the pleasure of seeing you. I am, Revd. Sir, with great esteem, Your friend, and very humble Servant. B. S. Barton.

P.S. Please to make my affectionate compliments to Dr. Cutler.[2249]

Barton's interest in the history of botany led him to suggest that he contribute to Belknap's *American Biography* (Boston, 1794-1798, 2 vols.). He would gladly send articles on John Bartram and John Clayton, and he added later "John Banister, James Logan, Benjamin Say, Thomas Godfrey, and some others who seems to me to be entitled to a place in your Biography." Belknap completed but two volumes (1794 and 1798), which Barton acquired, but he did not reach as far in history as the Americans that Barton suggested. Barton's letter reads:

Rev. Dr. Jeremy Belknap, Boston, Orange Street, near Liberty Pole,
Feb. 22, 1794

Reverend Sir,

I have received your kind letter, dated Febraury 3d. I am sorry that my negligence was the occasion of such a circuitous journey as that which you mention.—You have pressed right at the cause.

...It is now, I think, about twelve months since I desired our common friend Dr. Cutler to tell you, that I was very anxious to contribute my mite to the completion of your plan of an American Biography. At the same time, I informed the Doctor, that I could furnish you, with some materials for the lives of John Clayton and John Bartram, both Americans, who cultivated, with great success, the one in Virginia, and the other in Pennsylvania, the Science of botany. I never received any answer to this

2249 MHS.

letter. I, therefore, concluded (for I knew that Dr. Cutler had received my letter) either that our friend did not think it proper to trouble you on this subject, or that you were not anxious to possess any account of the two American naturalists. I am persuaded, however, that, in a work which proposses to be an American Biography, you will have no objection to record the lives of two men, so distinguished, and so able, as Clayton and Bartram. I shall, therefore, with real pleasure, transmit to you such materials as will enable you to form a judgement of the merits of these gentlemen. These materials shall be sent by Mr. Spotswood.—

I am much pleased to learn that the American Biography 'grows under your hand.' I have no doubt that the work will be very favourably received by the public. Permit me, however, to observe to you, that the curious of Britain will be as much inclined to read this work as those of America. You will, very readily, dispose of two or three hundred copies in England, and in Scotland. Be careful, however, in the choice of your London-bookseller. Charles Dilly,[2250] *with whom many of the Americans have had dealings, is not to be trusted. But excuse my freedom.*

By Mr. Spotswood, I hope, I shall be able to send the paper, which I mentioned to you. At the same time, I shall send to you what I know, or have practised, respecting the methods of preserving animals, &c.

I feel much interested in the prosperity of the Historical Society. Its object is a noble one. Please to present to the Society, in my name, the third volume of the Transactions of our Philosophical Society.

It will always afford me much pleasure to hear from you, and to contribute, as far as I may be able, to the advancement of the important work which you have in hand.

I am, with great respect, Reverend Sir, Your Humble Servant, and friend, Benjamin Smith Barton

P.S. The specimens which you mention will be very acceptable to me. B.S.B.[2251]

Belknap had philosophized a bit in a letter to Barton 5 April 1794: "To make man, four acts are necessary: to write a book, plant a tree, get a child, build a home," advice harkened to by a young ambitious naturalist. During that year Barton sent "a few pamphlets, &c. for the Historical Society" and asked whether the library possessed a copy of Bartram's *Travels*. His next letter was written after recovery from the yellow fever summer of 1793. Dated 23 November 1794 it reads:

Reverend and Dear Sir, Do not impute my long silence to a diminution of respect for your character, or to anything like a disposition to forget the kindness and politeness of your conduct towards me. Ever since the receipt of your letter of the 20th of June, I have been uncommonly engaged in my professional business...

For the hints which you have conveyed to me concerning the wild black cat and the Whappenacker, I am obliged to you. With respect to the latter animal, I have found that this harsh-sounding name [which is a corruption of an Indian word] *is applied, in some parts of Pennsylvania, to the Martin* [Pine Marten, *Martes martes*, 1758], *the Mustela martes of Linné.*

2250 Dilly published Barton's *Observations* and began on *Prodromus Florae Pennsylvaniae*, but Barton had run into financial difficulties—this while a student abroad.

2251 Ticknor papers, Dartmouth College Library.

> *I have received two letters from Mr. Peck. His last describes the little Jumping Mouse which you mention in your letter...Dipus...If I could discover its name in the language of the Delawares, or any other of our Indian nations, I should probably, adopt an aboriginal name for the species designation of this little animal. I am desirous of seeing something in this way attended to, in describing the new animals and vegetables of our continent. I call a new species of Squirrel, which inhabits Pennsylvania, &c. Sciurus Pimingus, Pimingus being its Delaware name.*[2252] *I call our minx (which is not, as my friend Mr. Pennant asserts, the Mustel Lutrola [Mustela lutreola] of Linnaeus) Mustela winingus. I prefer the Delaware words, for the purpose which I have mentioned, to those of any other Indian language, because the language of the Delawares, from all I can learn, has had a more extensive spread in North America than any other Indian language.*[2253]

Their "affectionate friendship" and correspondence lasted until 1796, two years before Belknap's death. Belknap had been a member of the first scientific party of eight to ascend Mount Washington in 1784. The climbing party had included Cutler, who recorded a few plants in popular phrases and was the first to distinguish three vegetation zones on the mountain. W. D. Peck was also a member.[2254]

William Dandridge Peck (1763–1822) became one of Barton's New England correspondents probably through Belknap and the American Academy of Arts and Science, then recently established. Peck came from an old family of shipbuilders. After graduating at Harvard in 1782 he was for some years a farmer near Kittery, New Hampshire, with a keen interest in nature. He is said to have come to natural history in a singular way. He found an imperfect copy of Linnaeus's *Systema Naturae* on the beach at Kittery, flotsam from a wrecked vessel. He had climbed Mount Washington when he was twenty, accompanying Cutler and Belknap, his alpine plants becoming of special interest to Barton because of Cutler's allegation that he had found *Erica*, the ericoid habit of the genera *Empetrum* and *Diaspensia* having misled him. They were examined by Frederick Pursh, when, traveling for Barton, he visited Cambridge in September 1807.[2255] It was that year that Peck was appointed the first professor of natural history at Harvard, and first director of the botanical garden.

Barton received two letters from Peck in 1794, according to what Barton wrote to Belknap that year. In the first, Peck wrote "Before I left Kittery I threw into my portfeuille a few, not very good specimens of plants which I wished to forward to you. I have been able to make but two little excursions this year, one early Spring, the other in August...In giving Generic characters I need not apologize to You for using the Latin language." In the second letter Peck answered Barton's request for a description, and he sent a life-size drawing of the little jumping mouse that so fascinated him, and which he called "Dipus americanus."[2256] "The american Jerboa" had interested Barton when he was assembling notes in 1793 for the second edition of Pennant's *Arctic Zoology*. He had first heard of his "Dipus" from "a gentleman" who had heard of one found near Quebec City, and he had studied a specimen in Peale's Museum and had consulted William Bartram. Barton had sent Peck a detailed description of

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2252 Barton's "Sciurus pimingus" appears as "Pi min gus," its name among the Delaware tribe, in his manuscript (Sterling, *Barton's Notes*, 34), prepared for Pennant. The manuscript failed to reach Pennant for the last edition of *Arctic Zoology*.

2253 MHS. [*Dipus americanus* is now synonymized to *Zapus hudsonius* Zimmermann or Meadow Jumping Mouse. MSW.]

2254 A. S. Pease, "Notes on the botanical exploration of the White Mountains," *Appalachia* 14 (1917): 157–158. The corpulent minister who did not climb very far was Belknap.

2255 Thacher, *Biography*, 37; Graustein, "Peck," 77; Ewan, "Pursh," 23.

2256 [*Dipus* is an Old World genus. See Chapter XXII, *Elements of Zoology*, and Chapter XXV, Mammals. This refers to *Zapus hudsonius* Zimmerman or the American Meadow Jumping Mouse. MSW.]

Peale's specimen, and had asked Peck for observations on the little animal's life habits. Both Barton's and Peck's descriptions have been moved to Barton's account in our Chapter XXV, Mammals. Peck wrote:

Boston, 6 October 1794

Dear Sir

I now address you from my native place, which I visit twice a year. I had the pleasure to take from the Post Office at Portsmo. Your favour of the 13th August, on the 1st Instt. on the eve of my journey hither. I beg you to accept my acknowledgements, for your kind attention to my last. It affords me great pleasure to find it afforded You any satisfaction.

Your opinion of the 2 species of Charadrius encourages me to be more attentive to them & I shall procure the Skins & transmit them to You by the first favourable conveyance.[2257]

Accept my thanks for your information respecting the new Editions of the Gen. Plantar. & Syst. Nat. I am very sensible of Your kind & polite attention in the proffered loan of Your copy when it arrives. I will expect these books & receive them as very dear friends.

My Friend Dr. Cutler has made me in Some degree acquainted with Mr. Muhlenberg's character. He introduced himself to Dr. Cutler soon after the publication of his botanic paper, in the transactions of our Academy; & I have long respected in Mr. Muhlenberg, tho' he is not my correspondent, the same frankness which has been so obligingly shown me by Dr. Barton.

It is my ardent wish that the lovers of Science in America & particularly those who cultivate the Science of Nature, may find & encourage among themselves that harmony which they every where find in the works of the Supreme.

I shall bear in mind Your inquiry respecting the Ursus Meles & will pay it all the attention I am able.

Your observation upon vague reports are I believe just. You 'rejoice that our correspondence has commenced.' It is a declaration which gives me great pleasure & I assure you that my Joy is mutual. You are pleased to say 'Scrawls' Your hand is very legible to me. Let not that deter you from writing regularly. Be as particular as your leisure will permit you as I am. Put me right with freedom when you find me erring, which it is likely. You frequently will, for it is but a few years since first, Linnaei captus amore, I have studied nature. I proceed with doubt & deliberation, am desirous to become a naturalist, but would not be a virtuoso.

...I will not at present add to this long letter, but must observe that when private conveyances present, I shall prefer them to writing by post, as I would not subject You to the expense of postage, & when you write by post, do not give Yourself the trouble to pay the postage. I am with much respect & esteem, Dear Sir Your obed. Servant

Wm. D. Peck[2258]

Peck's detailed description of his *Dipus*, the jumping mouse, Barton combined with his own for a paper delivered before the American Philosophical Society 2 October 1795. It did not appear in its *Transactions* until 1799, there having been a gap of six years between

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2257 The "2 species" were probably Piping Plover, *Charadrius melodus* Ord, and Wilson's plover, *Charadrius wilsonia* Ord, published in posthumous volumes of Wilson's *American Ornithology*.

2258 Barton papers, APS.

volumes three and four, a matter of distress to those who wanted to see new information in print before European scientists should scoop the honor. Barton had not acknowledged Peck's contribution in his article, an oversight which was to tarnish his reputation. His letter to Peck at Kittery, Portsmouth Mail, New Hampshire, 27 January 1796, expressed his esteem and appreciation of Peck's contribution in another way. It carried pleasant news as well as a typical request. Barton wrote:

> *Dear Sir*
>
> *Your two letters, of the 12th and 16th of December are now before me. I am extremely obliged to you for them, and also for the matters concerning the Canker-Worm.*
>
> *Since the date of my last, you were unanimously elected a member of the American Philosophical Society; and your election has been announced in the public papers. The Society are about to publish a fourth volume of their Transactions. Can you not find time to send us something? If it comes in one month, or six weeks, it will not be too late for publication in the 4th Volume.–*
>
> *In a letter which I wrote to you sometime since, in answer to yours of the 9th of December, I informed you that my drawings* [of Dipus, addressed to Peck by way of Belknap, in care of John Davis] *had sailed back, safe, to Philadelphia. They shall be sent to you along with some others, by a good conveyance. In the meanwhile, be so good as to examine the character of different species of Dipus in Gmelin's edition of the Systema Naturae, and let me know whether your Dipus is among them. I shall not neglect to send a copy of the* [lost] *letter which I wrote to you, in answer to your's by Mr. Ames.*
>
> *I shall be glad to hear from you soon, and often, your letters are invaluable to me. I only regret that mine are so barren. when you write by post, the simple direction, Philadelphia, will be sufficient. but should you, at any time, have a private opportunity, please direct to me, Fifth street, no. 86. north. I am, My Dear Sir, Your sincere friend, &c, Benjamin Smith Barton*
>
> *P.S. do not forget my queries concerning the 'Dogwood' Rhus radicans,*[2259] *&c.*

In an answer to Barton's two letters to him, Peck announced that he had proposed Barton for membership in the Historical Society, and acknowledged his election to the American Philosophical Society, but "having been exceedingly engaged" he had not had time to contribute a paper. A good deal of the letter dealt with the confusion among folk names for native plants, which had sprouted throughout the country. Some of the confusion could be traced to Manasseh Cutler, *An Account of the Vegetable Productions...* (Boston, 1785), in which Cutler had remarked that "the grossest mistakes have been made in the application of *English* names of European plants to those of America." Barton having inquired about the identity of dogwood, Peck checked with Cutler and reported from Kittery, 12th March 1796:

> *I owe you my acknowledgement, my dear Sir, for two letters; one of the 17th Decr. the other of the 21st Jany. Since I last wrote you. In my last I proposed to answer your queries when I returned from Boston, & in the meantime, as I had never been so fortunate as to see several of the plants*

2259 [Now *Toxicodendron radicans* (L.) Kuntze, Poison Ivy. IPNI. ITIS.]

growing respecting which You enquired, I applied to our Friend Dr Cutler for information.

It was not till within a few days that I received a letter from him, which enables me to answer some of Your enquiries. I shall begin with the Dogwood. This name Dr Cutler informs me is applied in different Towns, & even in different neighbourhoods, to a species of Willow, the Mespilus,[2260] *two or three species of Cornus & two species of Rhus. The poison Dogwood, he says is a large Species of Rhus with pinnate leaves, & is inclined to think it the Toxicodendron or Vernix;*[2261] *but is prevented from critically examining it, by the violent effects which even its atmosphere has upon his constitution. The Dogwood of his Botanic paper in Trans. Amer. Acad. he collected on a Journey in Connecticut, where it is commonly known by this name. It was in an early period of his botanic pursuits & he had not examined it, till his attention was called to it by my enquiries. He is now satisfied it is a Cornus & the Cornus Sericea; not an Oldenlandia. But I do not find in the Specimens he has kindly favoured me with, a perfect coincidence with any specific character in the Syst. Naturae.*

The Rhus radicans does not grow near me; I have therefore had no opportunity to examine it. It is called in Dr Cutler's neighbourhood Poison Ivy, & in Kittery Poison Ivy, & Mercury, or as they pronounce it Marcury.

...The Cornus florida I well know. It grows not far from me, but have not heard any popular name for it. The wood of this tree is much valued by some of the mechanics in Boston & is called new England Boxwood. You mention taking an infusion of its flowers. Be so kind as to inform me of their qualities.

...At a meeting of the Historical Society when I was in Boston, I did myself the Pleasure to nominate You as a Corresponding member. You have since been elected...

I cannot conceive that my letters are so valuable as you intimate. I beseech You, my dear sir, not to let me even suspect You of flattery, a vice which should [never] *be found in the bosom of the Naturalist & Philosopher, whose ruling passion should* [always] *be an ardent love of truth. Barren as You are pleased to call Your Letters* [you] *make them otherwise for I have heard of your industry, & afford me a great deal of Instruction. It gives me a very sensible pleasure to find You have recovered Your drawings,*[2262] *& shall hope to see them. I have looked thro' the characters under the Genus Dipus in Gmelins Ed. Syst. Nat. but do not find mine among them. I have not as yet been able to procure another of these amusing little creatures; but hope I shall be able to, the ensuing summer & shall take care to secure as many of its traits as possible.*

I do not find that the Ursus Meles is known in this part of New England. Gmelin makes the variety an inhabitant of the State of New York, on the authority of Riddinger. ? Who is this author?[2263]

2260 [Cf. *Amelanchier* Medik. IPNI.]

2261 [Both Poison Sumac and Poison Ivy are referred from *Rhus* to *Toxicodendron* as *T. vernix* and *T. radicans*, respectively. IPNI. ITIS.]

2262 Drawings entrusted to Judge John Davis to forward to Peck. See Davis's letter.

2263 *Ursus meles* L., now *Meles meles* L., the Eurasian badger, is replaced in North America by the American badger, *Taxidea taxus* Schreber. See fn. 146 for Schreber. Riddinger is not identified. Barton's drawing of "American Badger" (Figure 67) is certainly not the woodchuck, *Marmota monax* L., which he suggested (Sterling, *Barton's Notes*, 44).

...P.S. do not forget to send me Your answer to mine of the 6th Octr 1794. Write, I beg you. Please to remember that I am not an Esquire–
Received March 24th 1796[2264]

Intentions were of the best for Barton's cooperation with the Massachusetts Historical Society. He responded on 25 January 1799 to an offer from the Corresponding Secretary of copies of their "Collections," asserting that he had already sent in an order for their "late" numbers. He was pleased that unspecified copies of his works had been "acceptable," and announced "two or three little essays" on which he was engaged at the moment, and his hoping to publish his "Physical History of our Indians." He suggested the republication of Captain John Smith's *The General History of Virginia, New England, and the Summer Isles* (London, 1624) with its important map, predicting that copies would soon be impossible to obtain. No copy of the work is known to have been in Barton's own library. The work was reprinted in Richmond, Virginia, in 1819. To contribute to the Society would always "afford [him] real satisfaction" and he looked forward to a correspondence. He sent his "best respects" to his cherished friend, Judge John Davis. This is the last record among his papers of his contributing to that Society.

Barton's continuing queries to Peck received careful consideration–he wrote in much greater detail than was Barton's custom. A letter from Barton to Peck 24 April 1805 would lead one to think that he had become so overwhelmed by all his activities that he had almost forgotten the significant contributions from Peck, and that he had been derelict in sending specimens in exchange. By now he was immersed in the editing of the *Philadelphia Medical and Physical Journal*, to which he refers:

24 April 1805
Dear Sir,
I thank you for the interesting paper which you have forwarded to me. It shall have a place in the next no. of my Journal.[2265]
I will, most cheerfully, exchange Pennsylvania plants for those of your parts of n. England. I have already begun to make a collection for you. I will forward same by the first private conveyance. With respect to your plants, I am, at present, particularly anxious to have those of the first 13 classes, and some of the fuci [algae] *& filices* [ferns]. *I need not tell you, that the precise habitat will always be expected by me, and always given to you.*
I am very anxious to have some particular information about your excursions to the White mountains. Did you meet with any species of Erica? dr. Cutler, I think, said you did.–on this subject, I wish to hear from you.
Being, at present, occupied in making out a Catalogue of our N. American plants, any specimens from you will be highly acceptable to me. I am not so much occupied about grasses as other plants. Your Monardas, if you have any; your Dracaenas,[2266] *Convallarias, will give me much pleasure. In great haste, I am, my dear Sir; Yours etc.*
B. S. Barton

On 3 June 1805 Peck set sail for Europe on the *Galen* from Boston in preparation for assuming his professorship at Harvard. Peck wrote to Cutler 1 July:

2264 Barton papers, APS.
2265 Peck's paper appeared in *PMPJ* Suppl. 1 (1805): 57.
2266 Barton papers, APS. "Dracaena" is *Clintonia borealis* (Aiton) Raf.

> *...I took with me the Medical Repository of Dr. Mitchill and find,...that M. Rafinesque has found that the canvasback is the Anas ferina of Linné.*[2267] *I confess I feel a little vexed that Dr. Mitchill or Dr. Barton have not done this before, and that we are obliged to a foreigner for the name of a bird which has been so long celebrated; and I am ashamed, too, that this bird should be known to the wise men of the South more as a tid-bit, a gulae irritamentum, than as a link in the chain of nature. Now, the Anas ferina has been known to me several years...ten years ago, so that it is sometimes found in our waters; and the Valisneria, as I believe I mentioned to you, is found in the Artichoke* [River]. *As the plant which Mr. Rafinesque says is its food is found with us, the bird may also be reckoned one of ours.*[2268]

In his last letter to Barton, carried by Jacob Bigelow who was going to Philadelphia "as a medical student," and dated 23 October 1809, Peck wrote that he must now attend to zoology to the neglect of botany.

Barton's accumulation of data from his correspondents and his usual inclusion of but a modicum of information in return letters led to the reputation he acquired for receiving more than he gave. When Barton published his paper on "Dipus" in 1799, he did not mention Peck's contribution to his knowledge of the animal, nor did he identify the "gentleman" from Quebec. When one considers how liberally he cited published authors, it would seem that he considered it proper to appropriate to himself almost all the fresh unpublished information he had gathered through his various efforts. Or was it sheer greed and selfishness? The eager and ambitious youth who had seen the fertile field of American natural history invaded by foreign publications, fields he had planned as his domain, and whose professional life took ever more time and energy away from his beloved enterprises, his "giving" of information and credit became stunted. By 1812 Peck had begun a correspondence with Muhlenberg, who responded:

> *Lancaster, May 19, 1812*
>
> *Dear Sir*
>
> *I had the great Pleasure to receive your Letter dated April 17, a few days ago accompanied by a Packet of 19 specimens. For both I return my best Thanks, as I look upon them as Pledge of a long and constructive Correspondence with a Gentleman whom I have esteemed since many years, although not personally known.*

After a list of the plant specimens that Peck had sent him, Muhlenberg, always Barton's critic, continued with news of the state of botany and entomology in the country, and his desire to proceed with the flora:

> *With D. Barton I correspond but seldom except when he puts some queries to me. I could never persuade him to let me see his Herbarium although he has seen mine twice. His Principle seems to be 'It is more blessed to receive than to give' however he is indefatigable in collecting and has done much for Botany. I have several very good Correspondents who are also good entomologists. You are perhaps acquainted with them already, Stephen Elliot Esq. at Beaufort in South Carolina, D*[r] *William*

2267 Redhead Duck [*Aythya americana* Eyton, 1838] confused with the canvasback [*Aythya valisineria* Wilson, 1814. AOU. AUD.]

2268 Cutler, *Life*, 2: 325.

Baldwin at Wilmington State of Delaware now on his Travels to the Southern States and to the Creek nation, both would be extremely happy in a Correspondence with you, and never fail to answer. Our greatest entomologist in Pennsylvania is I think the Revd Valentine Melsheimer[2269] *at Hanover. He has published a Catalogue of the Coleoptera of his Collection. If you wish to see it, You are exceedingly wellcome to my copy, and indeed to anything I have in the way of natural history, only mention a House in Boston to which I may address my Parcels with safety by ship. Letters may go my mail.*

To hear once again something of D. Cutler at Hamilton [Massachusetts] *was a great Pleasure to me. He is an old Correspondent of mine whom I esteem very much. He gave me much Information. His Memoir is a good work and therefore deserves another edition with supplements. It is almost impossible to hit a very specific name of Linnaeus without comparing his Herbarium, even his Descriptions are often imperfect. The observations you made on the Memoir agree exceedingly with my conjectures I had written to my Copy, a few remain doubtful to me, probably because the Plants are not with us.*

...I have a good number of Michaux's Plants in dried specimens sent to me from Carolina and Tennessee, but I find that he is very imperfect in enumerating plants growing near to where he chiefly resided. Walter in his Flora Caroliniana has a Number of such plants which may be with safety added to an American Flora. How many plants may be in N England which are not to be found in Michaux, I really think it is too much for one man to find all the Plants of the States, especially the cryptogamous Plants which are so small and so numerous. We should try to get a Catalogue of every state and collect these in one general Catalogue. I have made one for Lancaster this is printed in the Transactions of the Philosophical Society of Philadelphia.[2270] *Another Catalogue of all hitherto known phanerogamous Plants of N America I have in MS, and am daily adding and filing, the Second Part one Cryptogamous Plants is not quite done, as a great number of Fuci, Confervae and Fungi are wanting in my Herbarium, & do persuade D. Cutler to give us the second Edition of his Memoir soon, that we may see what peculiar plants you have unknown in our Parts. When D. Baldwin returns from the Southward I expect we will have a very general Catalogue of Southern Plants.*

...In the beginning of this year I received a letter from Mr. O. Rich of Boston who had been lately returned from Europe with a most excellent library of botanical and other books on natural history. He proposed a Correspondence, which I accepted very eagerly and immediately in a letter. This was never answered. I wrote again with the same ill success. Do you know Mr. O. Rich personally, and may be still in your parts? You see how much I desire for a northern Correspondence. Should you see or write to D. Cutler pray remember my best Respects to him. May the Almighty grant him better Health and a long life with the same wishes for your Health and with great Respect I remain, Dear Sir, your most obedient servant. Henry Muhlenberg[2271]

2269 Frederick Valentine Melsheimer (1749–1814), author of the first separate publication on insects in America, *Catalogue of Insects of Pennsylvania, part first* (Hanover, Pa., 1806) listed 1363 species in 111 genera.

2270 See fn. 67 on Muhlenberg's publications.

2271 Linnean Society, London. See *TL-2* for Obadiah Rich.

William Baldwin's life was cut short by tuberculosis, and his plant catalog was never made. Obadiah Rich (1782?-1850), bibliographer, bookseller, lived in Boston until 1809 but had moved to Georgetown by this date. He was a pioneer collector of Americana and made buying trips to Europe; his *Bibliotheca Americana Nova* (London, 1846, 2 vols.) was based on his collection. He published his rare duodecimo entitled *Synopsis of Genera of American Plants* (Georgetown, D.C., 1814), based on the sexual system of Linnaeus.

Next to Pennsylvania, Barton's favorite garden spot was Virginia, where two of his brothers and his good friend Jefferson lived, a state with restorative powers for his poor health. Barton sent his envoy Pursh to botanize in the state where Banister, Clayton, and Mitchell were background for the history of his beloved botany. As early as 1795 Barton declared that he "meditated" on a new edition of the *Flora Virginica*, and in 1812 published (in a strangely small printing) not merely a partial new edition with additions, but, he said, "without any degree of arrogance...an entirely new work." It contained new synonyms and notes. Barton was not, however, the first to contemplate a revision of the Clayton-Gronovius *Flora Virginica*. Dr. James Greenway (1703–1794) of Dinwiddie County was characterized by Luigi Castiglioni, who visited the doctor, as "An Englishman by birth, physician by profession, and an amateur botanist." According to Castiglioni, Greenway had collected and named more than six hundred plants, many, he said, undescribed. He showed Castiglioni descriptions and observations, and permitted him to copy certain notes on medical uses made of the local plants by Indians and Negroes.[2272]

Whether Dr. Greenway had intended to revise Gronovius's *Flora Virginica* or to produce a totally new account is not recorded. His heavily annotated copy of the second edition of Gronovius, now in the Library of Congress, includes marginalia on twenty-seven new species, each associated with a number; for example, "Helianthus nova species 198" but without description.[2273] These annotations include the uses of the times. For example, the Green Pigweed *Amaranthus hybridus* (or a cultivar?) "grows about houses and is boiled & eaten while young," "N 530 Eupatorium rotundifolium Linnaei. Wild Horehound. Negro Ceasars Cure for poison. It is said to cure the Ague & Fever, is a good bitter, and serviceable in slow continued fevers which take their Rise from a distempered bile. It flowers in August in moist vallies. N° 544 Eupatorium Nova Species. It grows on dry Land and blooms in August. This resembles in taste the wild Hoarhound but is a much stronger Bitter, and I believe, more efficacious than the other" (p. 119). Or "Thapsia trifoliata L."[2274] Gall of the Earth highly extolled for cure of venomous bite of spider, snakes &c." What he referred to as his "Catalogue," however, is lost. His manuscripts were extant in 1854 according to Blanton.[2275]

Greenway corresponded with Dr. Paul Dietrich Giseke (1741–1797), botanist and entomologist of Hamburg, as early as 1772 and sent Giseke some four hundred plant specimens during 1773–1775. Five of Greenway's specimens have so far been located in the herbarium at the Royal Botanic Garden, Edinburgh: *Aristolochia serpentaria*, "ex Virginia 1773"; *Bignonia capreolata* no. 335 "e loco natali accepi 1773 a Cl[arissimus] Greenway"; *Clinopodium rugosum* no. 256 "e Virginia" (*Pycnanthemum incanum* Michx.!); *Fothergilla gardeni*, "D[octor] G[reenway]"; and *Podophyllum peltatum*, "e Virginia accepi 1771." No Greenway specimens are now known at Hamburg. Were other specimens exchanged or lost?

But what of Barton's connection with Dr. Greenway? It seems to have begun with Greenway's paper on the poisonous "wild carrot, wild parsnip, Fever-root or Mock-eel," "Cicuta [Angelica] venenosa," which was read in Society 19 Feb. 1790 by Barton. Barton annotated the manuscript as "an abstract to be published BSB 1791"—the first eight pages are

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2272 Pace, *Castiglioni*, 116.

2273 Title page inscribed "Jacobus Greenway." "Presented to the Smithsonian Institute by Revd Thomas P. Hunt (formerly of Virginia) Wyoming, Penna. 1860." This copy first noticed by Morrison, noted in Schoepf, *Travels*, 2: 327.

2274 [*Thaspium trifoliatum* (L.) A. Gray, the Purple Meadowparsnip. IPNI. ITIS.]

2275 Blanton, *18th Cent.*, 148–149.

missing today. The abstract was not published until 1793, and it bears but small resemblance to the portion of the extent original.

Greenway reviewed poisons as given to criminals, remarking that both the European poison hemlock, *Conium maculatum*, and the gum of the Upas-tree, *Antiaris toxicaria*, of Java are slow acting and "nearly equal to bodily torture." "Should not our legislature...for the honour of humanity" consider this American native, *Cicuta venenosa*, for effecting "easy death"? The plant is known today as *Angelica venenosa* (Greenway) Fernald [Venous Angelica].[2276] Barton did not mention Greenway's idea about the use of "Cicuta" for the dispatch of criminals in his *Cullen's Treatise*, 2: 191.

Another paper by Greenway that appeared in the same volume of the *Transactions of the American Philosophical Society* (1793) was "An Account of the beneficial effects of *Cassia chamaecrista*[2277] in recruiting worn-out lands and on enriching such as are naturally poor; together with a botanical description" (p. 226), a recognition of the benefits of plowing-in legumes. He also contributed "An Account of a hill, on the borders of North Carolina, supposed to have been a Volcano, in a letter from a Continental Officer residing in that Neighborhood, to Dr. J. Greenway, near Petersburg, Virginia" (p. 231-) which had been read to the Society 18 May 1792.

Four full letters from Greenway, 17 October 1791 to 3 March 1794, are in the surviving Barton correspondence. There is no evidence that Barton corresponded with Giseke, who had been a pupil of Albrecht von Haller at Göttingen and was associated with Johann Andreas Murray, director of the Royal Garden at Göttingen until 1791. Barton, before his return from Europe, had hoped to continue his studies and obtain a medical degree under Murray. Barton left no record that he ever visited Greenway, and there is none that the doctor ever visited Philadelphia.

James Greenway, son of a weaver, was born about 1703 just within the northern English border. Wyndham Blanton, medical historian, relied on the impressions of Greenway's grand nephew, General Winfield Scott,[2278] that James trained as a weaver and had little schooling, but became facile with languages, and that he came to Virginia early in the eighteenth century. He practiced weaving while he "prepared" for a license to practice medicine and, along with milling operations, amassed an ample fortune. He settled on 780 acres of land in the eastern part of Dinwiddie County near the Sussex County line. His daughter Susan was born in 1764. According to tax records for 1782 he owned eleven Negroes, eighteen "under age" Negroes, ten horses, nine cattle, and six vehicles.[2279]

By 1760, Greenway was collecting insects for Dr. Dru Drury, silversmith and entomologist of London, and when young John Abbot emigrated to America he carried a letter of introduction dated 9 September 1773 from Drury[2280] to Greenway. Drury was also in correspondence with Giseke,[2281] and so it is possible that Drury introduced Greenway and Giseke by letter. Drury was pleased with the "uncommon insects" Greenway sent him—"insects are my darling pursuit" he declared.[2282] In 1792 Drury wrote to Greenway, "I received a letter from Dr. Giseke advising me that he has sent a box of books for you, but by a subsequent letter I learned the ship put back by distress of weather after being out about a month. As soon as I receive them I shall convey them to you by the first ship that goes to the

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2276 Fernald, *Rhodora* 45 (1943): 301–303, based on *Trans. Amer. Philos. Soc.* 3 (1793): 335. Mitchill published on the "Venemous qualities of the water-hemlock or *Cicuta maculata*," *Med. Repos.* n. ser. 2 (1815): 303–304, detailing the effects on three small boys. Muhlenberg had identified the plant for Mitchill, finding it identical with the Linnaean plant.

2277 [Now *Chamaecrista fasciculata* Michx., Showy Partridge Pea. IPNI. ITIS.]

2278 Winfield Scott, *Memoirs*, 3–6. 1864. Blanton, *18th Cent.*, 148. J. H. Barnhart, "Early Virginia botany—Dr. James Greenway," *Claytonia* 1 (1935): 53–55.

2279 Tyler's *Hist. Genealog. Quart.* 8 (1926): 64.

2280 Dru Drury (1725–1803), *William and Mary Quart.* 26 (1918): 255.

2281 Paul Dietrich Giseke (1741–1797) of Hamburg. H. B. Weiss, *Entomol. News* 38 (1927): 208–214.

2282 T. D. A. Cockerell, "Dru Drury," *Sci. Monthly* 14 (1922): 76.

James River." Possibly the second edition of Gronovius, *Flora Virginica*, was among these books. This guide to the plants the doctor saw around him stimulated what might have been contributions akin to those of Thomas Walter or Stephen Elliott. The Revolution, however, paralyzed scientific contacts at home and overseas. Greenway also received letters from Linnaeus, who had been introduced to him by Giseke, and Linnaeus sent him a copy of his *Mantissa Plantarum Altera* (Stockholm, 1771). Samuel Vaughan of the American Philosophical Society, and fillip for Humphry Marshall's *Arubustum Americanum* in the same decade, hearing through Castiglioni of the Virginia botanist, encouraged Greenway to publish his revision of *Flora Virginica* in the Society's *Transactions*. Barton, the Society's expediter for such arrangements, was to intercede for Greenway. On 18 May 1792, Barton, in reading his "A botanical description of the Podophyllum diphyllum of Linnaeus"[2283] before the Society, incidentally mentioned Dr. Greenway, as "a very respectable botanist, who resides in Virginia." He also used Greenway's very phrase in describing John Banister's Virginia records as having been "swallowed up" in the writings of John Ray.[2284] Almost all American authors were unaware that Ray published not only Banister's "Catalogus" of plants and seeds sent in 1679 to Robert Morison at Oxford University shortly after his arrival on the James River, Virginia, but had also incorporated in volume three of the additions of 1689, and specimens sent to London after Banister's death in 1692. Banister's plants were also "swallowed up" in Plukenet's *Opera*, in Morison's *Historia*,[2285] and in Gronovius's *Flora Virginica*. John Clayton's own "Flora" manuscript with his descriptions from living plants, and his specimens, perished in a fire. He had not found financial support for its publication. Barton received his copies of Plukenet and Morison too late to reap the benefit of them.

Here is the first, perhaps not the earliest, of Greenway's four surviving letters to Barton, surely the suggestions an inspiration for the "Flora" that Barton had long contemplated. Greenway was nearing ninety—he died in 1794. Lacking the last page(s) the letter reads:

> *Dinwiddie County, near Petersburg, Virginia.*
> *October 17, 1791*
>
> *Sir*
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> *Your Letter dated Sept. 1st came to hand last evening: I could wish it had been received, a few days sooner; as an Opportunity of sending an answer by a very safe hand, then offered. Major Long a gentleman, from No Carolina, my particular acquaintance, set off for Philadelphia, in the stage; and should you per chance meet with him, after receiving this, he will bring safe any Letter, you choose to send. I hope my worthy Neighbor, your Brother,*[2286] *has recovered his health; please to present my best respects to him. I fear this climate is too sickly for his tender Constitution!*
>
> *Your Inquiry into the remains of Antiquity in America will, I suppose, be shortly published; and cannot possibly fail of Encouragements, as such researches are generally agreeable and instructive; and every curious mind is delighted with such Information.*
>
> *Your history of 50 Vegetables, of* [their] *spontaneous Growth of America, I should be glad to see published, with Copperplate-Likenesses of every plant, and should you add the Descriptions of each, according to the Method laid down by Linnaeus in the Beginning of the second Volume of his Systema Naturae; (Delineatio Plantae) and also insert the Latin as*

2283 [Now *Jeffersonia diphylla* (L.) Pers., Twinleaf. IPNI. ITIS.]

2284 John Ray (1627-1705), *Historia plantarum* (London, 1686 [-1704], 3 vols.) vol. 2 (1688): [1926]-1928; vol. 3 (1704): passim. Ewan & Ewan, *Banister*, "Plant Catalogue," 141-276.

2285 Robert Morison (1620-1683), *Historia Plantarum Universalis Oxoniensis* (Oxford, 1680-1699, 2 vols., vol. 1 not issued).

2286 Richard Peters Barton.

well as the English, it would render the work useful to other Nations; and Exhibit a specimen of your intended Flora Americana, which would excel all others hitherto published.

If the Flora of the United States could be done in this Manner, it would be an Honour to America—Production of their own—The Likeness drawn, in the true Colouring; and the botanical Description taken from the living Plant, standing in its native Soil, far exceed, in Accuracy, the Descriptions of American Plants nurtured in European Gardens, where the Roots alter, as to Duration; the Stalks vary, as to Size, and Cloathing; the Leaves exhibit the shew of luxury, poverty, cold; and the flower varies its colour with the Climate; producing either no seed at all, or if any, badly and imperfectly formed; yet from such plants, removed from America, have the great Botanists, Hill, and Millar taken their Descriptions. Others are not exempt, even the great Linnaeus himself; but such was the Sagacity of the latter, that in describing a plant removed from its native soil, he avoided Colour, Measure, and all Doubtful Marks, not to be depended on; and, with a Perspicuity peculiar to so great a genius, fixed upon such Specific Distinctions, as clearly, and invariably pointed out the Species.

Another Fault I shall mention, which has occasioned great inaccuracy, in the Descriptions of our American plants, by European authors. This is the Describing of plants, dried, and sent from America to Europe. The large and valuable collection of plants, made by Mr. Clayton in Virginia, was sent dried to Gronovius, who published the Descriptions of them, in his Flora Virginica. How far the Descriptions of these Dried Plants fall short or differ from the real characters of the living ones, may be Fully Discovered by Comparing and Examining the plants to which they respectively belong. Had Clayton described his Living Plants, and published them; his Collection would have done Honour to the State of Virginia; but in sending them dried to Europe he had deprived his Country of the Honour; and while he underwent the Labour of a Pack-horse, Gronovius reaped the profit; only allowing Mr. Clayton's name to stand in the title page.

Mr. Banister's Collection of plants, makes a still smaller figure in the Learned World. It has not the title of Flora, or any distinct treatise: It is Swallowed Up in a larger work; and has only the Name of a Catalogue. These plants were sent to the Bishop of London, who gave them to Mr. Ray; and they were inserted in his Work, which he was then compiling.

Other Collections have been made, by Travellers visiting America and these have been published in Europe. Those Collections have been more or less partial, as the Stay of these Gentlemen have been longer or shorter in America. Mr. Catesby seems to be the principal of these; and stands at the Head of them, for his great Accuracy, in Drawing & Painting; and his Abilities in his scientific Descriptions: But after all, we are forced to say that, the great scope of his Design, in mingling so many objects of Natural History together, required more Years to compleat a Plan, so amply intended, than he resided Months upon our Continent. For he took in, nearly, every Branch of Natural History, not only Botany, but Zoology, Ornithology, Ichthylogy.

Having now pointed out the Errors, in Describing Plants removed, or reared, in foreign Countries; and also the fallacious method of taking Descriptions from dried Plants; I need not urge the Necessity of examining every Plant, upon its native Spot; especially to you, who are so much better taught, in the Science of Botany than I am. It now remains that, I say a Word or two, concerning my own Collection of Plants.

Between 20 & 30 years ago, a Professor [Giseke] *in one of the European Universities was introduced, by letter, to me; and requested a Collection of our American plants, which he proposed to publish in Germany. In the Course of two or three Years, I sent him between 400 & 500. These he carried to Linnaeus, for Assistance, as the dried plants were difficult to investigate. This brought on a further Correspondence with the Founder of our System, who complimented me with a Copy of his Works, and his Picture: he afterwards sent me his Mantissa Secunda, wrote, as he terms it, in his Crepusculum Vitae. I was likewise requested, and advised, to send no more plants, except such as I could not make out, or distinguish the Genera or Species; and earnestly desired to describe the Plants, on the Spot of their Native Growth, according to the Delineatio plantae, in the Beginning of the second Volume of the Systema Naturae. This I complied with until our Correspondence was broke off by the War commencing between Britain and America. The War giving a different Turn to Men*[']*s Minds, our botanical Studies lay neglected, and in this State, my Collection of plants was found when the Count Castiglioni from Milan, visited me, on his Tour through the United States. This Gentleman, a very learned and great Proficient, in the Knowledge of Natural History and the Sciences, but particularly fond of Botany, as his favorite Study, examined every Plant in my Collection, together with the Descriptions, such as they then were. The Number of plants were, then, something more than 600; but the Number described was very small—not more than 50. These had been described, according to my former Correspondence, from the living plants, and agreeably to the Delineatio Plantae aforementioned. The Count seemingly took great Pleasure, in Perusing those few Descriptions; and earnestly pressed me, to publish them. Sometime after this I received a Letter from the Count at Philadelphia, enclosing another from Mr. Samuel Vaugh*[a]*n junior, pressing me for a Publication of my plants, in the Philosophical Transactions of your Society; and promising that, the Press should be attended to my himself; his Father, Mr. Samuel Vaughan; or Doctor Franklin: I, since that, have received from Mr. John Vaughan, one of your secretaries, two botanical tracts, wrote by Mr. Marshall, and Doctor Cutler.*[2287]

The rest of the letter may have contained botanical information that Barton removed for his own file. The "two botanical tracts" mentioned, Marshall's *Arbustum Americanum* (1785) and Cutler's "account" of New England plants (1785), came to Greenway's notice too late to be instrumental in his organizing his own version of Gronovius. From the following letter, however, it is evident that Greenway was soliciting printing estimates in 1792 for his projected "Flora of Virginia." "I have not a minute to spare now," he wrote to Barton, to look for examples of the procumbent Euphorbias. This letter concerns snails, river muscles, fossils, Hessian Fly, waterlilies, and mullein, which he has collected for Barton, and he mentions such authors as to indicate a notable botanical library at hand. "I may perhaps, by avoiding Scylla, have run into Charybdis," he wrote as he worked to complete his catalog.

Dinwiddie County Virginia
September 14th 1792
Dear Sir

2287 Greenway's four letters are in Barton papers, APS.

I received yours by Col. Heth, who has given me ample information of the very friendly part taken, in promoting the publication of my Flora Virginia, by yourself, Mr. Vaughn, and our late worthy Governor Randolph. I wish I could express myself with sufficient Gratitude for such Favours.

As Col. Heth has brought an Estimate & Calculation from the Printer, which he says he had not time to show you, I have enclosed it; that you may be the better enabled to judge, and give me your Advice further in this Matter. In the mean Time I will prepare a short Preface, an Index &c. that the Copy may be ready for the press. With Respect to printing it by Subscription, I must rest wholly on your Advice and Direction, as I am perfectly unacquainted with Things of that Nature. In Your next Letter, you will please to write more fully on the Subject; I am sorry that Col. Heth's Hurry to return to his Family was your Hinderance; the Letter sent to him was, I believe, more alarming than needful; the Child was not so dangerously ill, as there represented; and is, now, recovering fast.

You say—you desire our Correspondence to continue; and wish to render yourself or your Letters more useful to me!—You may assure yourself, my dear Sir, that your Correspondence is as desirable to me; I wish I could spend the Remainder of my Days in the Conversation and Litterary Correspondence of Men of Science, like yourself; but my remote and obscure Situation almost deprives me of those mental enjoyments, which arise from such Society.

[Then follows botanical detail on *Nymphaea* with a note on mullein, the spread of which so alarmed Richard Peters. Greenway ended his letter:] *Beg leave <u>here</u>, for want of room to subscribe myself Sir your most obedt. humL. servt.*

[Barton noted] *Received October 19th 1792.*

Greenway sent two copies of his third surviving letter, since Barton intimated that he had not yet received the letter of September 1792. Greenway mentions the 1679 "Catalogus" of Banister as having been translated into English, a copy of which Bishop Henry Compton gave to Castiglioni when he visited England on his way to the United States. A copy, once reported as in the Library of Congress, has disappeared, and we know of no other. Uncertainties in mail delivery, the fate of American species and manuscripts in Europe, and the lack of interest in the general public for botanical publications, in particular the failure to support the publication of his own "Flora," are expressed in Greenway's letter of 31 January 1793, marked by Barton as received 4 March:

January 31st 1793

Dear Sir

Yours dated October 16th, came to hand on the 19th of November. In the Beginning of October, previous to this, I had sent the Shells and Lava by a Capt. Crosier, who sails to and from your Metropolis & this place. As I understood by your Letter that you had not received mine, in which I had wrote amply on the Subject, & on answer to your former Queries; I have put off the Time, rather <u>too</u> <u>long</u> perhaps, without answering your last, in Expectation of seeing Crosier return, or receiving from you some Intimation of the safe arrival of the Things sent: I hope, ere this, you have got everything safe; as I understand the Capt. delivered them at Philadelphia.

I must acknowledge myself much indebted for your kindly offer to procure Subscribers for my Flora Virginica; but from the very poor success I meet with in getting Subscribers for your Books, I readily conjecture that

all your Endeavours, on that Score, will prove abortive; and, therefore, wish you to take no farther Trouble about it. The Science of Botany may amuse such as you and me; but the greater Number of People look upon these Amusements as useless and trifling; they had rather expend a Dollar to see a Tumbler or Rope-dancer; or if they should be seized with a Fit of Reading;—a newspaper, or the story of the Bear & Fiddle, is preferable to the Description of an insignificant Flower; it will afford them more diversion, and perhaps exercise their visible Faculties.[2288]

I have never received my Manuscript; I believe Col. Heth left it in Philadelphia.

You ask if my Anchusa Villosa[2289] *is a new Species.—I have placed it as such. It differs from that mentioned by Gronovius Floribus sparsis, Caule glabro; but as Gronovius had only the dry Plants for his Descriptions, I place no Confidence in them. Linnaeus could do no more than copy from him. I have copied from Nature; and you may depend on the Description there given. Clayton might have decided this Point; not only in this Plant, but in his whole Collection; but he neglected, and trusted altogether to Gronovius: He underwent the Labour of the Pack-Horse and Gronovius reaped the Profit and Credit of the Whole.*[2290]

Such has been the Fate of all the Collections made in Virginia. Banister's Collection is absorbed in a larger Work; where it is hardly known. The Bishop of London, with whom the Collector corresponded, gave it to Mr. Ray, when writing his Historia Plantarum; in which it was published. Even this by so learned a Man, was nevertheless sent in English to the Bishop:[2291] *the Count Castiglioni showed me a printed copy of it in our own Language, which Sir Joseph Banks gave him, at his Departure from England to America.*

I am trying, and shall still endeavour to get Subscribers for you, and anxiously wish to see your Book published; but I greatly fear, the Encouragement will not be adequate to the Merit of so curious an Undertaking.[2292] *I remember that a curious Extract from Mr. Jefferson's Notes on Virginia was published in our Petersburg paper, and was thought to promote the sale of his Book in this part of the country. If you will send me an Extract from yours, for the same Purpose, I will try the same Experiment. I remain Dear Sir yours sincerely*

James Greenway

The last surviving letter from Dr. Greenway before his death refers to a letter of May 1793 that Barton seems not to have received. The wheat bug or Hessian Fly was a perennial problem, and Barton was also seeking information on yellow water in horses. Most of the

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2288 Charles Daubeny (1795–1867) M.D., professor of botany, Magdalen College, Oxford, visited the United States in 1837. He wrote "it is too true, that Americans in general interest themselves but little in anything but politics, and what science there is seems broken up into little knots and cabals... There are men who have risen to eminence without favours or aid from the state, which has no idea of encouraging any kind of knowledge not possessing some immediate practical bearing." *Journal of a Tour made through the United States and Canada made during the years 1837–38* (Oxford, 1843), 88.

2289 Greenway's "*Anchusa villosa*" may have been *Lithospermum canescens* (Michaux) Lehm., "Hoary Puccoon," on the clue furnished by his annotated *Flora Virginica* now in the Library of Congress.

2290 Greenway probably was unaware that Clayton had attempted to publish his "Flora" in Virginia but failed, and his manuscript, "prepared for the press," was presumably burned in the onslaught of the Revolution (Berkeley & Berkeley, *Clayton*, 171).

2291 Greenway was mistaken. Banister sent his catalogue in Latin to Robert Morison at Oxford.

2292 Subscription to Barton's "Remains of Antiquity" for which he had issued *Proposals* in 1789? More probably to his "Flora."

letter contains medical reports, especially of malaria and typhoid, which Greenway confused as the same affliction. He mentions having sent the root of "Cicuta venenosa" and refers Barton to Jefferson's *Notes on Virginia* for information on climate:

> *Dinwiddie County Virginia*
> *March 3, 1794*
>
> *Dear Sir,*
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> *Your Letter of January 23d came to hand a few Days ago having been in the Post Office, some Time. You mention one enclosed but I did not receive one. The Book also, that you sent, has never come to the Post Office.–I have made Enquiry but can hear Nothing of it.–Your Publication on the Yellow Fever I shall be glad to see when it is printed, as I have seen Nothing as yet on the Subject worth reading. I suppose the Volumes of your Society, already published, contain many curious subjects but they never made their Appearance in this Part of the Country; at least I have never met with them.*
>
> *...With Respect to your Query about our Wheat Bug. It has been destructive more than 20 years.–Those insects were not more numerous, nor any others, than usual last year. The Epidemic Disease* ["Yellow water"] *among the horses, you mention, made no appearance here.*
>
> *I am glad you received the Box sent by Capt. Stratton; as you are now in possession of the Cicuta Venenosa & the Pleurisy Root.*[2293]*–I have received a letter from the Rev. H. Muhlenburg.*
>
> *I remain Sir your most obeda. servt.*
>
> *James Greenway*
>
> *P.S. You mention, the Society wants an Account of our Climate I would recommend you to Mr. Jefferson's Notes on Virginia; where you will meet with the best account ever published.–Although I have a Register of the Height of the Barometer and Thermometer, for between 20 & 30 Years, yet is taken in so lay a Manner that I cannot trust to it.*

"Some account of the autumnal bilious fever of the Atlantic side of Virginia. In a letter to the Editor from the late Dr. James Greenway, of Dinwiddie County, Virginia," taken from this letter of 3 March 1794, was published by Barton in his *Philadelphia Medical and Physical Journal* 1 (1804) Pt. I: 8–11.

Fifteen years after Greenway's death, Dr. James Cocke, once a pupil of Barton's, now of Prince Georges County, Virginia, wrote to Barton on 6 July 1809 regarding Greenway's manuscripts. From Dr. Walker, a nearby neighbor of Greenway, Cocke had learned that the papers, presumably including Greenway's "Catalogue of Virginia Flora," were in the hands of heirs, and that, spurred by Barton's interest in their purchase, were priced at that time at $200. Cocke intended to seek Jefferson's advice as to their value, and to dispatch them to a Philadelphia bookseller for sale or publication. No sequel to Cocke's letter has come to light, and Greenway's manuscript is not among Barton's *reliquiae*.

In 1792 Giseke published the genus *Greenwaya* in his *Praelectiones*, 226.[2294] Although one would expect the type specimen to be at Edinburgh, it has not been located. *Greenwaya* is now relegated to synonymy in *Amomum*. Greenway was elected a member of the American Philosophical Society on 18 April 1794, but this recognition may have come too late for him to know of it.

2293 Pleurisy root, *Asclepias tuberosa* L., noticed by Barton in *Collections*, ed. 1, part 2, 42, under the name *A. decumbens* L. Greenway was acknowledged for information.

2294 Paul Dietrich Giseke, Caroli a Linné, *Praelectiones in Ordines Naturales Plantarum* (Hamburg, 1792).

The Moravian missionary and teacher Samuel Gottlieb Kramsch (1756–1834),[2295] who had arrived in Bethlehem, Pennsylvania, from Germany in 1783, became another source of information to Barton. Kramsch wrote to Humphry Marshall that as a child "I loved the study of Natural History, and especially Botany" and after tramping the countryside "I enquired very often if nobody ever undertook a Flora Americana, or the like, but I could not learn of any." Kramsch urged Marshall to author such a work, but the "dull sale of [Marshall's] American Grove" discouraged publishers. Nevertheless he kept advocating such an undertaking. "It requires much diligence and time," he wrote to Barton, urging him to begin with a catalog, and asking whether he intended to consider Indian remedies. From Salem, Stokes County, North Carolina, came his letter of 22 June 1794:

> *Dear Sir*
>
> *I am allmost ashamed in having so long delayed to answer your agreeable letter dated Decbr 27th 1793, with which you honored me & which I received by the mail on the 20 Febr 1794. Sickness, family & other circumstances hindered me one week after another.*
>
> *I wish I were able to give you a satisfactory account & answer upon all your questions, but I am sorry to add that it is not within my power.*
>
> *...The only thing with which I am able to serve you is an index of the vegetables I have found in Pennsylvania & North Carolina, which I enclose herewith. It will be the greatest honor to me if it is of any service to you. I have added a P when the plant is found in Pennsylvania & N.C. when in North Carolina. But even this is incomplete, You will answer, because you will miss allmost all the grasses & likewise the last Class of Mosses &c.*
>
> *Several plants I was not able at all to determine, especially as I have no learned friend hereabouts, with whom I could communicate. I have sent several collections of dried plants to Professor Schreber[2296] of Erlangen in Germany who is about publishing a new Edition of Linnaeus Species plantarum. He answered me several times & was surprized at so many new species still discovered in North America. I was glad to learn in your letter your intention of publishing a work on the natural history of the United States. This is what I was wishing for as long as I lived in this country, but did never see the least pamphlet of this kind except Humphrey Marshalls American Grove. Indeed it is a great & difficult labours, which only your talents will be able to perform with the help of literary assistances, which however must be of another nature than that of mine.*
>
> *But excuse my liberty & permit me to make a few observations. I have often seen in other countries the like undertaking & with displeasure I afterwards perceived, when the work was exposed to the world, so many additions, corrections & explanations & the like, that I pitied the Editors troubles & diligence as he was afterwards obliged either to make another more complete edition or to publish a Supplement. Would it not answer to write first a small pamphlet of this matter, & if it was nothing but a mere catalogue of your collection, besides the plan of your whole work. Your*

[2295] Native of Silesia, Kramsch taught at Salem from 1789 until 1813. His pupil Lewis David von Schweinitz joined him there for the last months. Manuscript notebooks, probably Kramsch's work, entitled "Flora Salemensis," are preserved in the Salem archives. Kramsch collections are in the Muhlenberg herbarium (Mears, "Muhlenberg," 157). Howard Elkinton, *Amer.-German Rev.* 11 (1945): 21–23. portr.

[2296] Johann Christian Daniel von Schreber (1739–1810), professor of medicine and botany at Erlangen, studied grasses particularly—he named the genus *Muhlenbergia*—and published, among many works, the German translation of the illustrated tract on the Venus Flytrap, *Joh. Ellis...de Dionaea muscipula...* (Erlangen, 1771), which originally appeared in John Ellis (1711–1776), *Directions for bringing Seeds and Plants from the East-Indies* (London, 1770), 35–41. Mears, "Muhlenberg," 171; *TL-2*.

friends & others would then be more enabled to encrease it, to send you their additions & observations & thus it would perhaps offer a more or less complete & lasting work.

If it is in my power I will gladly furnish you with what my capacity & my very few leisure hours afford. Is it within your Plan to add also the mechanical & medicinal uses of the different plants? If it is, it would perhaps be well to get some information from the former Inhabitants of this country, I mean the Indians, as I understand they are particularly skillful in this way, but by what channel I do not know, but as you are acquainted with Mr. Reichel something could perhaps be done by our Missionaries among them.

I fear I have provoked your patience, I therefore beg You once more to excuse my freedom.

Concerning the english language I suppose I need not to make an appology, and You will soon discover that I am a german.

According to Your demand I send this letter by the mail unpaid. I remain Dear Sir with the greatest respect Your most humble Servant.

Samuel Kramsch.[2297]

We did not locate a reply from Barton.

Still seeking specimens from eastern Virginia, Barton wrote to his close associate at Edinburgh, Thomas Mann Randolph, now living at Monticello, who responded:

Nothing will give me greater pleasure than to collect seeds & specimens for you but I am afraid I shall too often mistake for rare what is quite familiar to you. The next summer if I live I may expect more leisure. The imprudence of my relations and my vast attempts to sustain and relieve them have made me a slave the best period of my life. I have some prospect now of relief from the grievous burthen they have thrown upon me.

I am Dear Sir with every sentiment of esteem and respect your most obedt.

Received Oct. 29, 1810[2298]

Whether he was able to collect for Barton at this time is not known. He was then business manager for his uncle, Thomas Jefferson.

In August of 1813 Barton visited William Bartram at the garden on the Schuylkill. On 23 August Alexander Wilson died of dysentery at the age of forty-seven years and forty-eight days. He had completed the eighth volume of his *American Ornithology*, and was working on the ninth. On 3 April Jefferson had queried of Barton "When shall we have your book on American botany?" Whatever Barton's answer, on 18 November Muhlenberg announced to Baldwin, "Dr. Barton, you know, is now in the place of the excellent deceased Benjamin Rush. Whether his new situation will hurt his Botanical pursuits, time will show."[2299] Baldwin at St. Marys, Georgia, had stated a like problem to Muhlenberg on 11 June, "Like my preceptor, Dr. B. I have too many irons in the fire."[2300]

2297 Barton papers, APS.

2298 Barton papers, APS.

2299 Darlington, *Baldwin*, 144.

2300 Darlington, *Baldwin*, 89.

Chapter XX

Irons in the Fire

"I consider the science of botany as being so intimately connected with medicine, and with other useful arts, and I am so unfriendly to the mere nomenclatural part of the science, that I once resolved never to exhibit my description of a new plant, unless I could at the same time, give some account of its properties in medicine, its use in diet, or in dyeing, etc. I have, however, been obliged to alter my determination; for of the Jeffersonia binata I know nothing that will serve to illustrate its history in either of these respects."[2301]
—Barton

Rekindled Hope for the *Prodromus* and *Flora Virginica*

It was not only as Professor of Natural History, but as Professor of Materia Medica that Barton contemplated his "Flora." He had known the lack of a text on plants of Pennsylvania while on his western trip in 1785, and so had begun his *Prodromus Florae Pennsylvaniae* for publication in 1787 while a student in Edinburgh. It was botany that held his most persistent attention. William Bartram, Nicholas Collin, Greenway, Cutler, and Kramsch offered advice, cautioning him to begin with a catalogue. And so Muhlenberg advised him, but Barton had more ambitious plans. He would satisfy that need with a new guide for this young nation. Jefferson's few pages in his *Notes*, and after he acquired them, Gronovius, *Flora Virginica*, and Linnaeus, *Species Plantarum*, suggested the marches ahead. However, Barton's medical practice, his teaching, and his cooperation with Pennant on American animals had all delayed his progress. Muhlenberg had written to William Bartram in 1792, "How does our friend Doctor Barton do? He will find it a very difficult task to write a complete Flora Pennsylvanica, at this time; and I wish I could persuade him to take only his own neighborhood. Delaware, Schuylkill, the under parts of the Jerseys, will take a number of years to have all their plants well and satisfactorily described."[2302] Muhlenberg himself since the 1770s had been collecting plants in the vicinity of Lancaster and encouraged correspondents to send him specimens from as far away as Savannah, Georgia.

Barton recognized his problem since in *Fragments* he had written "I have made considerable progress in an extensive work on the vegetables of Pennsylvania, and some of the adjoining states. But this will appear in a separate form:—I will not say when. For who does not know that 'the promises of authors are like the promises of lovers?'" His "Journals" of his trips and the notes on plants that he made in western Pennsylvania, Niagara Falls, in Virginia, and locally along the rivers nearer home, and in New Jersey, all prove Barton to be not, as Ord portrayed him, a mere botanist of the closet. Muhlenberg wrote to John Brickell[2303] in Savannah, Georgia, 1 March 1804, "Dr. Barton is very busy writing his Flora Pennsylvania."

The "Medical and Philosophical News" in *Medical Repository* (1804) carried the note that Barton "is now engaged in preparing a large work on the plants of Pennsylvania and some of the adjoining states" and that Barton had engaged Pierre Jean François Turpin (1775-

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2301 *Trans. Amer. Philos. Soc.* 3 (1793): 344. Note after description of *Podophyllum*.

2302 8 Oct. 1792, Darlington, *Memorials*, 471.

2303 C. Earle Smith, "Henry Muhlenberg—Botanical Pioneer," *Proc. Amer. Philos. Soc.* 106 (1962): 443.

1840),[2304] a "French Gentleman, and one of the first delineators of plants now living, to draw and colour the new or more rare indigenous plants." This had been Barton's notice to the *Repository* that he wished subscriptions for the work. "The first volume will be put to press as soon as the plates shall be graven."[2305] Barton always hopeful for support for publication!

Among at least fifty "Indigenous plants" Turpin drew for Barton are *Magnolia tripetala* as *M. acuminata*) (Figure 59), *Symplocarpus foetidus* (Figure 77), *Jeffersonia diphylla* (Figure 79); *Helonias bullota* (Figure 80); *Halesia carolina* (Figure 81), *Aquilegia canadensis* (Figure 82), *Asimina triloba* (Figure 83), *Silene virginica* Fire Pink (Figure 84), and *Trillium grandiflorum* (Figure 85).

Early in March of 1805 Barton went into the field going by way of Lancaster, Hagerstown, Winchester, and Staunton, returning home by Washington and Baltimore. He visited Monticello, since on 18 March William Bartram wrote Jefferson that Barton had informed him that he would like the horns of the stone-buck (*Capra cervicapra*?).[2306] Whatever journal notes he made are in the present state unidentifiable–some he may have inserted elsewhere, and notes involving Jefferson may have reached other hands.

Despite longstanding debts (he still had not repaid his student loan to Dr. Shippen) Barton embarked on a new obligation. He became patron to Frederick Pursh, who was leaving the "Woodlands." Barton had visited Hamilton and his garden on 2 June,[2307] perhaps discussing with Pursh their working together. Pursh would order up Barton's herbarium, make plant drawings, and help with identifications. This would enable Barton to put more time into editing his *Philadelphia Medical and Physical Journal*, and preparing the "observations" he had accumulated from his own researches and travels, and from a growing number of correspondents.

He would still make his own observations. Excited by the first flower of a *Delphinium* that he saw in Bartram's garden in 1805 he hurriedly wrote out a full description on the back of a student's letter, noting that it "seems to be Michaux's D. tridactylum." The trophy had, in fact, surely been brought back by Mathis Kin (d. 1826),[2308] who had detected rarities for Philadelphia friends, then vanished again into Cherokee country on another pilgrimage for plants. Barton again noted *Delphinium* on 8 May 1806:

"King's new Delphinium is in flower at Bartram's this day," and four years later on 11 May, "at Bartram's, in open ground in flower, the Delphinium discovered by Mr. Kin a fine plant."[2309] Barton was unaware that Michaux's *Delphinium tridactylum* was the same as Aiton's *D. exaltatum* described in 1789 from a plant grown by Philip Miller in 1758 at Chelsea Garden, London, from seeds gathered sometime before at an unrecorded station, and sent by John Bartram.

When Bartram's eyesight was failing, Barton depended more on his own visits to Bartrams' Garden and kept notes for the "Flora" he had long been planning. In "Botanical Notes No. 1" dated 23 March 1805 he recorded that "Although Michaux makes the southern species of Dodecatheon a distinct species [*D. integrifolium*], it has always seemed to him [William Bartram] to be the very same as ours." Then "Concerning Bartram's garden, etc.":

> *May 23rd 1805 Will. Bartram informs me that 'Good-night-to you' is the name of a species of Cassia, both in N & S. Carolina, among the negroes, the country-people & others. It receives this name, because about 4 or 5 ocl. in the afternoon (towards the cool of the evening) the foliola close upon each other, & hang down during the night. He says, it has the*

2304 Lasegue, *Musée*, 489, et passim.

2305 *Med. Repos.* 2nd Hex. 1 (1804): 427.

2306 Barton papers, APS. [Actually, the American Pronghorn, *Antilocarpa americana* Ord, 1815.]

2307 Barton papers, APS, the note on a scrap of paper attached to a letter from Amos Gregg 13 Aug. 1805.

2308 Kin, sometimes Kinn. Barnhart, *Bartonia* 9 (1926): 38, was unaware of holographs now available.

2309 Barton papers, APS.

> *property all its life (I dob't this); that its flowers are yellow, & that it grows 4 or 5 feet high. He thinks it is the very species described by Dillenius (whose figure I showed him) vol. 1, p. 72: Cassia obtusifolia of Linné* [*Senna obtusifolia*, Java Bean, Sickle Pod.]

In an undated note: "Botanical," Barton recorded: "Hamemelis [*sic*, *Hamamelis*, Witch Hazel]. W. Bartram informs me that the elder Michaux told him, in the most positive manner, that he had seen Hamemelis (the very same as ours) on the Caspian-Sea, growing wild."[2310]

Barton had announced in his *Philadelphia Medical and Physical Journal* 2 (1805) Pt. 1: 178: "The Editor...is preparing for publication his *Prodromus*...A short prospectus will be given in a future part of the Journal." Then in Supplement One the next year, pages [77]–92, under "Reviews, & Literary Intelligence" he expanded:

> *The Editor of this Journal has already announced his intention to publishing a Botanical work, to be entitled Prodromus for a Flora of the States of New York, New Jersey, Pennsylvania, Delaware, Maryland and Virginia. Agreeably to the promise, he now proceeds to give a general idea of the plan of the work, the first volume of which, including the plants of the first ten or twelve classes of the sexual system, he flatters himself he will be able to publish some time in the course of the year 1807.*
>
> *The Prodromus will be comprised in (at least) two large volumes (royal) octavo, and will contain descriptions of a much greater number of plants than are enumerated in the whole of Flora Boreali-Americana of Michaux...much attention will be paid to the dietetic, the medical and other uses...comparative proportion of land and water, of mountainous or high and low ground; of calcareous and other soils; their temperature, etc.*
>
> *A series of plates, from original drawings...will be engraved by able artists, both in Europe and America. Many of the drawings are already prepared: some of them...*[by] *that able artist, Mr. Turpin, who passed some time in Philadelphia, and at present resides in Paris.*

Barton might also have referred to the drawings made for him by Pursh. These also rest among Barton's *reliquiae*. It was probably in England that Pursh made the one identifiable illustration for his own *Flora*. In a footnote, page 80, Barton referred to his "Sketch of a Geographical View," then still in manuscript. Extracts covered the genera *Mitchella*, *Callicarpa*, *Cornus*, and *Pothos putorii* Bartram, which is the skunk cabbage, now *Symplocarpus foetidus*.[2311]

Barton's announcement of his *Prodromus* had followed his announcement of Muhlenberg's *Catalogus*, and it in turn had followed Barton's diplomatic notice of Rafinesque's plans:

> *Mr. Rafinesque, an Italian gentleman, has put into the hands of the editor, a MS. Catalogue of the plants of the State of Delaware, and of the District of Columbia. This catalogue with large additions by the Editor, will be published in future parts of this Journal.*[2312]

Were these not challenges to Barton to complete his own Flora? Despite Barton's announcement, Rafinesque's paper was not published.

2310 Barton papers, APS.

2311 [*Symplocarpus foetidus* (L.) Salisb. in W. P. C. Barton ex Nutt., *Veg. Mater. Med. US* 1: 124. 1817. IPNI.]

2312 Elbert L. Little, "A note on Rafinesque's Florula Columbiana," *Proc. Biol. Soc. Wash.* (1943): 57–65.

One of his reasons for hiring Pursh had been to put Pursh's talents and background to work on a "Flora" of which one fascicle had already been put into print. He planned to insert the new species brought back by Pursh from his Virginia and New Jersey trips, and those from a northern trip he was planning for Pursh. The seeds from Lewis and Clark were growing in M'Mahon's and Hamilton's gardens, and Barton was to describe the grown plants. He was still seeking Plukenet's record of early American collections.

With no classes in session at this time of year, Barton was devoting what time he could to his own interests. To Olaf Swartz at the Royal Academy of Science in Stockholm 29 July 1805:

> *My 'Prodromus of a Flora of the States of New York, New Jersey, Pennsylvania, Delaware, Maryland and Virginia' is at this time in the press. I am now printing the sheets relative to the 4th class. The whole work will be comprized in at least two pretty large octavo volumes. I shall not fail to send to you a copy, when it shall be published. I have no objection to your announcing, to some of the literary Journals, this intended work, the plan of which is, in some respects, new; and I hope it will contain not a few new American plants.*[2313]

An answer to a request came from:

> *Kingsess. December 31t. 1805*
>
> *My Worthy Friend*
>
> *I am sorry it is not in our power to procure for Your Friend any Miselto; The Gum Tree over the Schuilkill, has been destroyed, & I know of no other. It is said to grow, on the road which leads down toward Blakely Island or that way.*
>
> *I think the surest way* [to] *recover it is to enquire of country people in Philadelphia Market.*
>
> *I shall endeavour soon to go to town, when I shall, call on You but don't let this prevent You from coming here, for it is uncertain when I shall go to the City.*[2314]

Barton's lectures on botany and natural history were based on his own continuing field observations, on information gleaned especially from his good friend William Bartram, and from pupils who were encouraged to contribute their experiences and observations. Mr. Tucker from the island of St. Thomas related his knowledge of guavaberry, "a most delicious fruit,"[2315] and cashew, a native tree of "tropical America." Tucker reported that one person in five hundred is affected by unroasted poisonous nuts which contain an irritating oil.[2316] "It seems from [Tucker's] account that the prepuce and scrotum are sometimes terribly affected."[2317]

Not only an addition to his *Fragments*, his *Prodromus*, and his *Journal*, he had an accumulation of notes on animals, on the botanists Clayton, Linnaeus, and Vahl that he hoped to contribute. He continued to comment in the *Journal* on articles submitted by others: by F. D. Meyer, William Bartram, Walmsley, A. Fothergill, Bishop Madison, Laborde, Williamson, and "Mr. D. T." He also included notes on Matthias Barton, Bartram, Cuvier,

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2313 Royal Academy of Sweden, Stockholm.

2314 Barton papers, APS.

2315 *Myristica floribunda* (West ex Willd.) Berg.

2316 *Anacardium occidentale* L., early carried around the world by the Portuguese. I. H. Burkill identified the oil as cardol. The poisonous substance is expelled by roasting, the nut then edible.

2317 "Botany Notes no. 1," Barton papers, APS.

William Dunbar, Brickell, Heckewelder, E. Darwin, Ebeling, and Fabricius. His "Letter to Lacépède" on North American Indians and animals, read before the American Philosophical Society in 1802, appeared this year in London in *Philosophical Magazine*. His letter to Dr. Pearson on the effects of metallic solutions on plants appeared in *A Journal of Natural Philosophy, Chemistry and the Arts*. Always with the desire to enhance knowledge of his own activities to foreign naturalists, and to spread knowledge of the usefulness of native North American plants, Barton sent a copy of his *Collections* to Antoine Gouan (1733–1821) at Montpellier. On 18 April 1806 Barton wrote to William Bartram, "By the way, this last winter, I returned to a class of 158 gentlemen."[2318] Certainly a feeling of satisfaction. On 6 June William Bartram showed him a flicker's nest hole.[2319]

A letter to Mary from somewhere along the way to Passaic or Perth Amboy, New Jersey, in 1806 mentions among financial dealings his professional cares and concern for the drawings for natural history projects. Benjamin Latrobe's drawing of the Siren still rests among Barton's papers. Mr. Reider does not appear in Groce and Wallace, *Artists*, nor in Smith, *Index Artists*, but his drawings made at Bartrams' Garden rest among Barton papers. The "young gentlemen" were medical apprentices.

> *Dear Mary*
>
> *...I wish one of the gentlemen to repeat in the most careful manner, Dr.* [John R.?] *Smith's prescription of the Squill-pill. They will find the prescription, in the book. Have* [it] *then sent in the safest manner.*
>
> *I hope the young gentlemen will make every effort to have the business attended to. About Miss Warner, Mr. Carrell's child, Mr. Wetmore, Miss Stran, Miss P. Rose, & Mr. West's family, I am particularly anxious. When valuable new cases turn up, Dr. Kuhn, Dr. Pak* [Thomas Parke?] *& Dr. Wistar I have no doubt will attend for me.*
>
> *I wish Mr Latrobe spoken to about the Siren, which he has offered to draw. Request Mr. Collaren to give a look after Mr Reider at Bartram's. I wish Reider to finish, in his best manner, Pyrola umbellata, & Pyrola maculata.*[2320] *I am anxious, that he would, go on drawing such plants as Mr W. Bartram shall direct.*
>
> *My love to the Children, tell them I hope their papa will hear no complaints against them, on his return. God bless you, B.S.B.*[2321]

Robert Fulton[2322] confused his information. He wrote Peale 22 September 1806, "Mr. Barton is at Monticello, philosophizing with the President." Pursh visited Monticello about that time.[2323]

The trip may not have contributed to Barton's health, since Muhlenberg, after a visit in mid-August, reported to Brickell, 9 October 1806 that Barton was ailing for want of exercise.[2324]

Editing *Philadelphia Medical and Physical Journal* took so much of Barton's time that he contributed nothing substantial until Part 2. Then besides articles on animals he entered notes

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2318 Barton papers, APS.

2319 [The Northern Flicker is *Colaptes auratus* L., 1758. AOU.]

2320 [Now *Chimaphila umbellata* (L.) Nutt., and *Chimaphila maculata* (L.) Pursh, respectively. IPNI. TROPICOS.]

2321 Barton papers, APS.

2322 Robert Fulton (1785–1815), born Lancaster Co., Pennsylvania, pupil in early art classes with Barton and Cope, inventor and civil engineer. After years in England he returned to the United States. Robert R. Livingston, brother of Edward Livingston, Thomas Pennant Barton's father-in-law, aided him in the search for financial support for his *Nautilus*. Carl W. Mitman in *DAB*.

2323 Conarroe Autograph Collection 7: 63, HSP.

2324 Gratz Collection, Scientists, HSP.

on Banister, Krieg, his cherished pupil Walmsley, Dr. Daniel Conrad, comments on the way in which Jefferson recorded Indian speech, along with reviews and miscellaneous notes.

The success of the *Philadelphia Medical and Physical Journal* climaxed in 1806. It was too heavy a burden for its editor, and the number of subscribers to sustain it for the publishers, J. Conrad and Company, was not sufficient. Two Supplements in 1806 and 1809 would finally take care of the papers that had been submitted. In spite of his chagrin over not seeing his manuscript included in the *Journal*, Rafinesque still honored Barton with *Jeffersonia bartonis* [*odorata*] Twin-leaf, in his *Medical Flora*.[2325] That manuscript disappeared along with many other Barton papers.

Barton wrote of the pressures of his many activities to Judge Davis in Boston 15 June 1806:

> *I regret that I so seldom hear from you. Perhaps I am myself to blame, as I am a very irregular correspondent. My professional engagements do not permit me to be very regular or punctual in my epistolary intercourse with friends. And it is no uncommon thing for me to begin to write a letter, which I am prevented from finishing by an attack of gout, or sickness of some other kind. Be assured, however, that it will always afford me much real pleasure to correspond with one whom I so greatly respect...*[2326]

From Louis Hue Girardin,[2327] Professor of Natural Philosophy and Chemistry at the College of William and Mary, came a request "Williamsburg, Va. Sept. 23 1806" for the identification of *Dioscorea villosa* and *Clematis*, as well as for botany books, presumably for his planned Hallerian School in Richmond. He also wished directions for having Woodhouse's chemical apparatus prepared for him.

> *Excuse, I intreat you, a new enquiry. I found yesterday the dry Caulis volubilis, with the capsula triangularis, trilocularis trivalvis of a plant unknown to me. I enclose it to you with a few seeds.*
>
> *An Dioscurea paniculata?*
>
> *and should the plant of which I sent you, a few days since some semina caudata be the Clematis sericea of Michaux? Of the genus Clematis I have yet found but 2 species, viz: C. Virginiana, and C. viorna* [Vasevine]. *and not having seen the sexual organs of the plant in question, nor those of the one now enclosed, I would not venture upon a determination, and rather than wait till next year to consult nature, I thought I would consult you, her interpreter. The disadvantages under which the solitary student of botany labours are very great. He must travel for a long time to complete his catalogue—Whereas a botanic garden brings knowledge to his door. But even thus the Study is delightful—it is like the chase, doubly pleasing from its fatigues &c.*
>
> *Chionanthus Virginicum, Magnolia tripetala, Aralia spinosa, Gelsimium nitidum*[2328] *(M.) &c &c we have in our adjacent woods. Flora seems to have*

2325 *Medical Flora* (Philadelphia, 1830, 2 vols.) 2: 11.

2326 HSP.

2327 Louis Hue Girardin (1771–1825), born Louis François Picot, had landed as a fleeing Girondist (a moderate republican) at Hampton Roads. He became joint proprietor and sole editor of the *Richmond Enquirer*. From 1812–1819 at intervals he taught literature and French at an academy in Staunton, Virginia, followed by years at Baltimore College. Davis, *Jefferson*, passim; Edith Philips, "Louis Hue Girardin and Nicholas Gouin Dufief and their relations with Jefferson," *Johns Hopkins Stud. Rom. Lit. Lang.*, extra vol. 3 (1926). Dufief was a book dealer in Philadelphia.

2328 [*Chionanthus virginicum* is properly *Chionanthus virginicus*, published by Linnaeus, 1753, as "virginica," the Fringetree. *Gelsemium nitidum* Michx., refers now to *Gelsemium sempervirens* (L.) St.-Hil., Carolina Jessamine. IPNI. ITIS. TROPICOS.]

dropped her Corbeille between Wmsb & James-town; but to our botanic treasures you are not a stranger.

Could Walter, Aiton, and Hull be added to the Works mentioned in my last [letter]*? Mr. Dufief directed by you where to procure them, would make the purchase for me.*

I wish to have a chemical laboratory upon an economical plan, and, as we have here neither materials nor workman, I have requested Dr. Dufief to solicit Dr. Woodhouse's directions for having one made in Phila. If you see Dr. Woodhouse would you be so good as to say an obliging word to him respecting that object.

Accept my sincere excuses, and the assurances of the esteem and respect with which I am Dear Sir, Your obt. hbl servt. L. H. Girardin[2329]

If Barton answered, we found no copy. Nor is there an answer to a letter from William Darlington in Chester County, September 1806, who had repeated experiments of others with *Zea mays* to determine the correctness of "the sexual doctrine" in plants.[2330] Had Barton not published on sex in plants in his *Elements* (1803)? Had he not the idea in mind when he wrote in 1793:

I think, it was the genius of Linnaeus which first suggested the idea that, with respect to vegetables, the business of creation is not stationary; or, in other words, that new plants are constantly creating from the admixture, or union, of two distinct species, either of the same, or of different genus...The genera Solidago and Aster are, with us, two familes of bastards.[2331]

For his "Flora" Barton recorded in his "Botanical Notes No. 1" for 13 August 1806: "In Bartram's open grounds, in full flower, Two species of *Sideroxylon* both Carolina plants, one has its leaves beneath covered with a golden lanugo; the other with leaves quite smooth. The smooth one, Mr. B. says is very common in N. Carolina; the downy one, he says more southern. Both abundantly in flower. Note this for my fragments new edition." Unfulfilled. On 15 December he sent "from his affectionate friend" to Bartram a copy of his paper on the Hessian Fly,[2332] a "quantity of paper (royal)" for drawings, and a copy of the last number of the *Journal*.[2333]

About the local endemic *Talinum teretifolium*, which had first been collected and illustrated by John Banister about 1689, and for which Pursh would publish a description in his *Flora* in 1814, Barton recorded:

July 18, 1806. *Talinum given to me by Dr. Baldwin, is now in flower in my garden. The doctor says he has always found the capsule 3-valved...*[it grows] *in high ground, dry, but not sandy, of a very loose texture, so that the plant is very readily pulled up, & at the same time in a black soil. The vein of soil in which it grows, is called the 'Black Barrens' & runs from Pennsylvania into Maryland: it is, he says a very peculiar soil...about 30 miles from Philadelphia & 8 south of Downington. Marshall has found it in Goshen township about 15 miles from Philadelphia in the same vein.*

2329 Barton papers, APS.

2330 Barton papers, APS.

2331 *Trans. Amer. Philos. Soc.* 3 (1793): 344, in account of *Podophyllum*.

2332 [Hessian Fly is now known as *Mayetiola destructor* Say, 1817. ITIS.]

2333 HSP.

On August 20, 1806 he noted:

> *I examined two flowers of the Talinum in my area, in full bloom: one had 13 stamens, as well as I could count them & five petals, the other had certainly six petals & certainly 15 stamens, calyx two...This plant continues flowering in my yard almost every day: yesterday, there were at least 6 or seven flowers open. It makes a pretty appearance.*[2334]

A memo written to himself and recorded on the reverse of a letter from Amos Gregg reads:

> ***August 2d. 1806.*** *I went to Bartram's. I could observe only a single flower of Franklinia in flower. Clethra acuminata*[2335] *still in flower, and in great perfection Agave virginica*[2336] *in flower: the flowers not fragrant. Helianthus canescens (as I take it to be) just beginning to flower. Will. Bartram thinks his father brought this plant from Virginia. Verbena carolina in flower in the garden. It is a good deal like the* [Vervain] *Verbena I found at Harper's Ferry &c., but is different; and this last is new to Bartram. Mr. B. assures me that Thuja occidentalis grows as far south as the mountains of North Carolina, where he thinks he has heard it called 'Juniper'* [Arborvitae]. *He did not himself see it in N. Carolina, but he could depend upon his information; & that there it attains the height of a tree from 60 feet & above. The people of N. Carolina make 'white ware' of it, that is tubs, pails &c. & for this purpose deem it next, in goodness, to the White Cedar. He observed to me, that the wood is a good deal red, like that of the Red Cedar. They compose their tubs &c of the Thuja & White Cedar, & thus give a variegated appearance. Mr. B. says his brother brought the Cornus circinata from the Lehigh mountains. In the garden, in flower the Tragopogon virginicum.*[2337] *Mr. B. says it flowers all the summer; & that he never could make it, when* [under] *examination, a species of the genus Hygoseris,*[2338] *as Michaux has done.*[2339]

Amos Gregg's letter from Bristol, [Pennsylvania], 20 May 1805 had included:

> *Anonymos? Pentandria Monogynia*
>
> *Cal: Perianth 1 phyllus superior, 5 parted, subulate longer than the Corolla: Corolla monopetalous, tubulous, gibbious at the base, 5 fida, divisions round.—Stam. fil: 5 affixed to the tube of the corolla. shorter. Anthers oblong, grooved. Pist. Germ ovate inferior, Style longer than the corolla. Stygma headed. Pericarp. Capsule globular 3: celled—Seeds 3 ?—*
>
> *Leaves connato-perfoliate. bases ap. opposite, accuminate Bracteas 2 on each side of the stem. Flowers at the axils of the leaves & stem.—*
>
> *Doctor Barton will excuse the liberties I take—I find it a difficult task to keep back what I think is new. At this time I am confident of indulgence that whether the plant is described or not it appears to be worthy of*

2334 Barton papers, APS.

2335 [*Clethra acuminata* L., Mountain Sweet Pepperbush (cf. Fig. 53).]

2336 [Currently *Manfreda virginica* (L.) Salisb. ex Rose, False Aloe. IPNI. ITIS.]

2337 [*Sic, Tragopogon virginicus* may refer to *Krigia virginica* (L.) Willd., Virginia Dwarf Dandelion. IPNI. ITIS.]

2338 [*Krigia* Schreb. IPNI.]

2339 Barton papers, APS. *Cornus circinata* [L'Hér.] is now relegated to *C. rugosa* Lam.; *Hygoseris* [*sic, Hyoseris* L.] is a *Krigia*.

attention. I shall bestow a little on it. The Root & berries are powerfully bitter & have been used with much success as a tonic in Intermitting fevers &c.—It is called and believed to be Gentian by the country people. I found it growing Wild on the Delaware 7 or 8 Miles above Trenton on this side. Where I also found the Asarum Canadense. Yours &c A Gregg Jur.

Grape vine leaf found on the Delaware flowers not expanded.

Did Barton make a suggestion?

So as to be confident of his correctness in identifying and naming American plants for his "Flora," Barton sought the early records in works cited in Linnaeus, *Species Plantarum*, and in Gronovius, *Flora Virginica*. He wrote to his early acquaintance in London, Sir Joseph Banks, once again, having inquired in 1796:

Philadelphia, Dec. 27 1806

Sir:

I have never yet been able to procure the two works of Plukenet so frequently referred to his Almagestum & Amaltheum. As I am about the put to press my Florula of Pennsylvania, New Jersey, and some other adjoining States, Those works for the purpose of reference, would be truly valuable to me. Can you possibly put me in the way of procuring copies of the works? I hope you will excuse the liberty.

My Florula will comprehend the names & characters of a very great number of N. American plants of which no notice is to be found in the Flora of Michaux. With very high respects, I remain, Sir, Your obedient & obliged Servant, &c. B.S. Barton[2340]

Plukenet's *Opera* arrived safely. Barton's "Florula of Pennsylvania" is a longer story.

Baldwin, attending Barton's botany class in 1806, regretted that Barton spent so little time on "Cryptogamia" and grasses.[2341] Yet on 3 July 1806 Barton recorded that "William Bartram is doubtful if it be a fact, that Arundo [*Arundinaria*] gigantea always dies after flowering, though he allows it is mentioned by Du Pratz, & is a very general opinion in Carolina."[2342] On 22 October 1806 Barton wrote to Joseph C. Cabell, in care of the Governor of the State of Virginia, at Amherst Court House. Cabell had collected plants and Barton requested a view of them as he hoped to publish the first volume of his "Flora" very early in the spring. "Many of the sheets are printed off."[2343] A landmark indeed it would have been if both the *Flora* and his *Elements of Zoology* had appeared in the spring of 1807. He continued to make notes, "Concerning Bartram's Garden etc. August 30, 1807—In flower, in Bartram's garden, now, in open ground, a Sedum, which William says John brought from Greenbryar. it is a pretty and showy plant. I suspect it is Sedum Telephioides[2344] of Michaux. 'floribus diluto pupurascentibus,' very good. anthers darker purple, I examined several flowers, all of which had exactly 5 females." And that same day, "Mr. Bartram informed me, that Ipomoea coccinea [Scarlet Morning Glory] grows plentifully in N. Carolina. He thinks it probable, that it extends into Virginia. This plant is now abundantly in flower in the garden of Bartram."[2345]

2340 Autograph collection, Natural History Museum (London), Botany Department ADD 8098.

2341 Darlington, *Baldwin*, 17.

2342 "Concerning Bartram's Garden," Barton papers, APS. "One kind [of cane, *Arundinaria gigantea*] grows in moist places," Antoine Simon Le Page du Pratz, *History of Louisiana*, S. C. Arthur, editor (New Orleans, 1947), 235. Ewan, "Barton's library," no. 190.

2343 University of Virginia, Library.

2344 [*Hylotelephium telephoides* (Michx.) H. Ohba. IPNI. TROPICOS.]

2345 Barton papers, APS.

Was a volume complete for publication in 1807? Barton's *Prodromus florae Pennsylvaniae*, so longtime an ambition, puzzles us today. How much he had completed will never be known, for scorch marks are evident on some of the surviving sheets. Had the enormity of the project finally overcome him? Had his disappointment with Pursh, his alcoholism, and his departure in 1808; his own serious illness in 1810; and his own increasing professional commitments led him finally in desperation to abandon and destroy this work that had so much promise? Or did Corrêa da Serra in 1812 so discourage him by his advocacy of the new system of plant classification by Jussieu—Barton convinced that it was an improvement over Linnaean system. A number of pages printed on both sides and labeled "Q. pp. 115-122" may possibly have been a part of that printed in London by Dilly in 1788, the genera *Heliotropium* to *Myosotis*, all in the Linnaean Class Five, Pentandria Monogynia. There also survives a bill dated 1805 from the Philadelphia printers, Thomas and George Palmer, for the cost of printing "500 copies of 17 forms of the Prodromus." Ian McPhail suggests, with reasons, that Palmer's bill may relate to the printing of "Q. pp." referred to above.[2346] There also remain among Barton's papers six pages, printed on one side only, pages 25, 32, 78, 81, 86. Pursh's handwriting appears as editing several of the sheets. Rejected pages, they were used as scrap.

Callicarpa, p. 25, was "Revised Aug. 29. F.P." and had appeared as corrected in Barton's announcement of his work in *Philadelphia Medical and Physical Society* Suppl. (1806): 82-84. On the back of this printed sheet is Barton's note "I will be very glad to have the revises of this work, as soon as possible. They will be useful to me, as enabling me to refer where I am sometimes at a loss how to refer." There are also a few notes on *Acorus*. On page 32, verso, are notes on *Aralia hispida* (Figure 49). On the printed side is an example of Barton's often verbose text with much more detail on the comments of travellers, and on culinary and medical uses of American plants:

> *...that the Plantago major and some other species, were not deemed natives, at the time when Lawson wrote his valuable work, especially as he mentions, in the same list with the Plantains, Dill, Anise, Coriander, &c. Upon the whole I think it probable, that Plantago major is not a native of the United States. But this question may be decided in a more satisfactory manner, by the inquiries of our travellers in the western district of the United States, beyond the Mississippi; and by interogating the Indians, whether they have any names, in their native or unaltered languages, for this plant. This I deem one of the most unequivocal means of deciding the question, whether many animals or vegetables, now common in, are natives of, the country.*

Barton also gave much more detail in the citation of synonyms than Michaux, Pursh, or Nuttall in their North American floras. On rejected page 78 is the note that "Mr. Michaux informed me, that he found the same species [of the Witch Hazel, *Hamamelis*] in Persia, on the Caspian Sea. In his Flora, this writer merely speaks of it as a native of Virginia." Verso page 78 reads:

> *...we have the authority of Abbe Molina, who tells us, in his very interesting work on the natural and civil history of Chili,*[2347] *that the fields of that kingdom produce the potatoe* [two illegible words], *and in abundance. To Molina we are also indebted for an interesting observation concerning*

2346 Ian McPhail has also puzzled over the mystery of the lost *Prodromus*. McPhail, *Barton*, 37-38.

2347 Giovanni Ignatio Molina (1737-1829), *Compendio de la Historia Geographica, Natural y Civil del Reyno de Chile, escrito in Italiano...traducida en Español por Don Domingo Joseph...* (Madrid, 1788, 1795, 2 vols.). Ewan, "Barton's Library."

this vegetable. He says these wild potatoes which the Indians call Maglia, produce small and bitterish roots which is owing to the want of proper cultivation.

Molina also says, that there are two distinct species of potatoe and more than thirty varieties, which are cultivated with advantage. The first species seems [end of surviving account].

On page 81 Barton wrote:

Whether it be a native or foreigner, I believe it is a fact, that Cuscuta Europaea [the Greater Dodder] *is much less common in North America than Cuscuta Americana* [American Dodder]. *Clayton, Walter, and Michaux, have only mentioned the latter species in their Florae. Dr. Cutler has very distinctly mentioned two species. It is not easy, however, from this gentleman's description, to reconcile, with absolute certainty, the* [page ends].

Page 83 seems to have been from an earlier printing of p. 81, revised by Pursh with his note added "Swartz, obs. 54." Verso there were Barton's notes on the Bogbean *Menyanthes*, and on page 86 verso, Barton's notes for *Cynoglossum*. What a rich source his "Flora" would have been for the student of the history of botany!

Even though his "Flora" was always in the back of his mind, there were many diversions into other fields. In his *Discourse* he mentions another treatise, "View of my Travels," which he did not complete in the form he had once planned. At least some of it appeared in essence in other works, for example in *Geographical View* incomplete as that was. His former pupil, Dr. George Cheyne Shattuck of Massachusetts, sent him observations made on an ascent of Mt. Washington. John Lyon stopped by to add notes on vegetation from his southern searches for nursery stock to be shipped to England. Lyon had preceded Pursh as gardener at Hamilton's "Woodlands" and had taken over again for a short spell after Pursh left that garden. Had Pursh, his skills and misfortunes, come into the conversation between Lyon and Barton?

In a letter dated 19 April 1807 Barton addressed Professor John Gottlob Schneider (1750–1822) of Saxony, author of *Historia Amphibiorum Naturalis* (Jena, 1779–1801), giving a description of the "Siren lacertina." He had sent his paper to Sir Joseph Banks in April 1806 hoping for its publication in a London journal. Not receiving a response he published fifty copies in Philadelphia in 1808, sending most of the copies to correspondents in Europe, one to Dr. Lettsom. His own contributions to his *Philadelphia Medical and Physical Journal* were notes on Peruvian bark, extinct elephants, locusts, and Bighorn sheep.

In May 1807 Barton dispatched Pursh on an extended tour through northern New York and into Vermont. Whether this expedition was due solely to Barton's vaulting ambition for a national flora, or whether he needed a respite from his "groggy friend," an increasingly inefficient, and perhaps less cooperate helper, is not recorded, nor was Pursh's difficulty in working with an increasingly ill and choleric taskmaster. Pursh may have come to resent that his expertise would appear under his patron's name. For whatever reasons (he states a purpose in the preface of his *Flora*), he set off on a collecting tour of the northeast. That relations worsened this year between patron and collector is shown in the letters in our Chapter XVII, Barton's Protégés.

A visitor in July was Jean Baptiste Leschenault de la Tour (1750–1808), who had sailed from Java enroute to France. He showed Barton a drawing of the southwestern Australian "Acquarium siticus" (*Cephalotus*?), the account of which was later published in *Philosophical Magazine*.

In order to accommodate his growing family, meet his patients, house his library and specimens, in 1807 Barton began negotiations with a Mrs. Bates for her red-brick, three-story

house at 241 Chestnut Street, within walking distance of the University. John Vaughan handled the transactions:

> *The interest to commence the 1 May. You can have possession when you wish it. They will have the titles all ready, to deliver when the first payment is made. To Whom is the Title to be made—give the exact terms you wish used. I suppose 'B—S—B—of Phila—Physician' & if you think you can pay more than 3000 drs. let me know as soon as you can & whenever you can fix the day of payment let me know. April 23, 1807.*[2348]

A loan was obtained from Thomas Willing Francis[2349] for $16,000 with interest from 1 May at a yearly net charge of $90. There was also land for a botanic garden, a lot "between Delaware Seventh and Eighth on the north side of Chestnut." Richard Peters acted as witness, and conveyance of the mortgage was by Samuel W. Fisher.

Sometime during 1808 the Bartons moved to their last residence. About 22 February 1808 Barton hosted a supper (a housewarming?), leaving a list of invited guests, then amended to signify those who came. "6. all the gentlemen, in American Philosophical S 31. will. Came except One, of the Archers."[2350]

François Michaux was in Philadelphia, for Wistar wrote Jefferson from Lancaster 2 June 1808 that Michaux was with him on his way to Pittsburgh, as was a second companion, Mr. Biddle, "a young gentleman of Philadelphia." By 22 March 1809 Barton was able to record in his "Botanical Notes No. 8. This day the first flower of my China Magnolia opened completely:—in the green house." Later that year he wrote to R. A. Salisbury in England, "Your Magnolia conspicua has flowered, in very great perfection, in my Viridarium. It is, indeed, a noble shrub. Your drawing of this species is not one of the best in 'Paradisus.'"[2351]

He continued to transplant natives to his "botanic garden" for later observation. On 13 June 1811 he recorded "The beautiful Asclepias, which I take to be Michaux's A. Hybrida, now abundantly in flower, where I saw it yesterday, with Dr. Seybert, is furnished with a perpendicular root, going pretty deep in the ground, and which may be called sub-pyriformis. It is a perpendicular root...I planted this root in a pretty large pot."[2352]

Barton's horse was stabled near the new home in a carriage house shaded by a handsome willow. Barton asked old Mr. T. J. Paschell to supply hay, but he answered 4 October 1810 "I have no hay in my barn this year such as you would prefer I will stop over to my neighbour Chas Justis and see wether he has any if so it will be in town to-morrow or the next day if it should not come in that time depends not on either of us I am sorry I cannot supply you I am your friend."[2353] Such were the problems of transportation for the busy physician, and hay for a discriminating customer.

Shippen died 11 July 1808, and Barton was requested to complete payment on his early loan for his studies in Edinburgh. That may have been one reason why on 22 December he obtained a loan from Robert Evans for $144. It may also have influenced his decision to edit

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2348 Barton papers, APS.

2349 Thomas Willing Francis (1767-1815), graduate of University of Pennsylvania 1784, was a successful merchant, director of the Bank of Philadelphia, and prominent in social life. His portrait by Gilbert Stuart *Pennsylvania Mag.* 49 (1945): 83-85.

2350 In a numbered column the list reads: "J. Shelby—will. did come; A Montgomery, will. Came; all the gentlemen in A[merican Philos.] Soc. 31. will. came, except One of the Archers; N. Nelson, will, came: D. Greene. Will, did not; Coulter, cant. did not; L. Gaunt [sp.?] will. came. Mr. Lukens. will. came; Davis, Lukens friend. will. did not; Mr. Baer. sent. came; Tyler. sent. came; Balston. sent. came; Mr. Hairy. sent. came; Owens—sent. came; G. Rose will. did not; Fontaine will. came; Wist[ar]. will came." There were four blank numbers at the end. No family members were listed. Barton papers, APS.

2351 *Magnolia conspicua* Salisb., perhaps conspecific with *M. denudata* Yulan, is a precocious flowering "China magnolia." Ewan, "Barton's library," no. 285. Barton papers, APS.

2352 Barton papers, APS.

2353 Barton papers, APS.

"with numerous original notes and illustrations" a three-volume edition of Saint Pierre's *Studies of Nature*.[2354] His interest in this work was stimulated in part by what he had written in his *Discourse*, p. 31, "There is a vast chasm...in what I have always deemed the most interesting part of natural history: I mean the instincts, or manners, or habits, of animals." He had been long engaged, he told readers of *Studies of Nature*, on observations of instincts and behavior, and had read to his classes on the subject. He hoped, he wrote, within the course of three or four years to publish at least a fragment of his planned account.

There also appeared a promising successor to Pursh. Thomas Nuttall met Barton with a specimen of *Vallisneria* in flower for aid in identification, and so began their association 1 August. There were intrusions on the heavily involved professor's time. Nathaniel Potter (1770–1843), M.D. 1796, now practicing in Baltimore, on 29 October requested not only information on whether *Cynanche trachealis* (Diptheria) was contagious, but introduced a Mr. Pinkerton, who wished to take lectures. He had studied under Dr. Brown of Baltimore, but is not listed as earning a degree at Pennsylvania.[2355] William Barton urged Barton to meet visiting Rev. Mr. Adams, who was favored with "genius blended with a pretty large portion of excentricity," this letter written two days after Christmas.[2356]

There were additions to his library. James Swords, printer in New York, wrote Barton 3 October 1808 that he was forwarding a prepaid parcel from "old Mr. Campbell, just received from Scotland." It was being sent on board *Melinda* to the care of Mr. Dobson in Philadelphia, who would collect payment of freight due.[2357] Another honor came when Barton was elected President of the Philadelphia Medical Society, a position he held until 1812.

In Barton's *Journal* there had appeared "Some Account of the Plant called Jestis-weed, in Curing the Disease induced by the Bites of the Rattle-Snake, and other Venomous Serpents. Communicated to the *Editor* by Mr. Haynesworth." The author had reported on nine cases that were "cured" by drinking decoctions of various strengths, sometimes with milk, or as a poultice. "Jestis" was a Negro who had first used the plant about twelve years ago.[2358]

Lemuel Kollock wrote from Trenton, New Jersey, 11 October 1808 with regrets for not having called on Barton and with a query initiated by that article.

> *I shall remain in New York perhaps for a fortnight before I embark for Georgia. Pray what is Jestis weed? or where does your correspondent Mr. Haynesworth reside?*
>
> *His account of the efficacy of this weed corresponds so exactly with the account I have received of a root growing in Georgia & which is known among the people of the upper country of that State, by the trivial name of the Rattle snakes' master—that I am induced to believe they are the same— the testimonials of the powers of this root* [prepared & administered in the same manner] *over the poison of this snake were too respectable to permit me to doubt the reality—Should you feel a wish to examine this root I believe I can procure & send it to you—With requesting you will present my respects to Mrs. Barton I am very respectfully yr obliged humble Svt L. Kollock.*[2359]

2354 *Studies of Nature...with the additions of numerous notes...*by Benjamin Smith Barton (Philadelphia, Boston, New York & Albany, 1808, 3 vols.).

2355 Barton papers, APS. On Potter, see Austin, *Imprints*, nos. 1559–1560.

2356 Barton papers, APS.

2357 Thomas and James Swords of New York were said to have printed 31 science books between 1790 and 1800. They were second only to Thomas Dobson of Philadelphia, who printed 60 between 1796 and 1800, this according to Rogers, *Books in Medicine*, which is hard to believe.

2358 *PMPJ* 3 (1808) Pt. I: 57–61.

2359 Barton papers, APS.

Barton marked the letter "answered," but we found no copy. Jestis, now Justice weed, is *Eupatorium hyssopifolium* or *E. leucolepis*. Rattlesnake's master might well have been *Liatris scariosa* or *L. squarrosa*, but the name may also have been applied to other genera in other localities, *Eryngium yuccifolium*, for example.

Vice-President Barton was absent from the meeting of the American Philosophical Society on 21 April 1809 when "Jean André Michaux of Paris" was elected a member.

Though Barton wished to concentrate on completing his "Flora," his obligations as physician and Professor of Materia Medica intruded. G. Williamson on 20 July 1809 inquired of Barton's opinion on his publishing an edition of Tourtelle's *Élémens d'Hygiène*[2360] in which he mentions goiter. Williamson had attended a practical course of lectures some years ago, and now would like to possess a degree, but pecuniary circumstances prevented it. "Suppose now I were to purchase tickets this fall, would it be necessary for me to attend the course this season, or might not I come forward in the spring without. Perhaps you would be severe on one who would adopt this method, altho you might respect his medical knowledge. A degree would be of no advantage to me as a practitioner, but on another it might."[2361] Whatever he may have thought about this slighting of Medical School training, Barton responded to Williamson's letter 25 July 1809:

> *Dear Sir*
>
> *I shall be very glad to encourage, as far as I can, the work which you have undertaken to translate. As yet, however, I have not seen the original.—I have not at hand a copy of my memoir on the disease of Goitre. Since the publication of this little and imperfect essay, in the year 1800, I have collected much additional information concerning the disease, which is extremely common in <u>many</u> parts of America. It is my intention to publish a new, and much improved edition of my work. I wish you to read the 'appendix' with attention.*
>
> *The laws of the University positively require, that the candidate for the degree of M.D., shall have passed <u>two winters</u> in the University: but they do not require, that he shall have attended the course of every professor. With sincere wishes for your Prosperity, I remain, Dear Sir, Your friend, etc., B. S. Barton*[2362]

The year 1809 also saw the end of *Philadelphia Medical and Physical Journal* with its Supplement Three, which included Barton's "Facts and speculations relative to Diseases," which contained a review and criticism of Dr. Blumenbach's paper on human diseases. His "Hints on the etymology of certain English words," which he had read before the American Philosophical Society in 1804, now appeared in the *Transactions*. Another paper read 7 February 1800 was his *Geographical View* of which he sent "all the sheets" yet printed to Jussieu in Paris on 5 August, hoping to stir European interest.

Lyman Spalding (1775-1821),[2363] M.B. Harvard 1797 and later M.D. Harvard, and M.D. Dartmouth, where he lectured on chemistry and materia medica, began his practice as an army surgeon at Portsmouth, New Hampshire, 1799-1812. He spent the winter of 1809-1810 in the classes of Rush, Caldwell, Physick, and Dorsey. His letters, if located, would surely comment on this contentious period. He presented a copy of his dissertation on animal heat

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2360 A copy of Étienne Tourtelle, *The Principles of Health (Elements of Hygeine)...*, translated by G. Williamson (Baltimore, 1819, 2 vols.) is in LCP. The *Élémens* was first published in Paris (1796/97) with a second edition published there in 1802. See Austin, *Imprints*, 1917.

2361 Barton papers, APS.

2362 Barton papers, APS.

2363 Garrison, *Hist. Med.*, 761; Andrew G. Du Mez in *DAB*; Austin, *Imprints*, nos. 1801-1807 are all at APS. A manuscript, "Useful hints from medical lectures," is at Countway Library of Medicine, Boston. The absence of letters in Butterfield, *Rush*, is unexpected.

to Barton.[2364] Spalding went on to a successful career, innovation of medical techniques, and as a teacher in the "remarkable center of medical education," the College of Physicians and Surgeons of the Western District of the State of New York. On his return from Philadelphia, he had a part in Barton's election as an Honorary Fellow of the New Hampshire Medical Society.

Barton's Virginia Tour of 1810

To make definitive progress on a scientific prodromus or national flora, Barton had come to realize that he must extend the background he had already acquired about what had been published on American plants. He had now acquired a copy of Plukenet's *Opera*, and with Linnaeus's *Species Plantarum* he decided the best way to proceed would be to update Gronovius, *Flora Virginica*, by adding to each species the references in literature that he had found. In both *Species Plantarum* and *Flora Virginica* he had found references to *Opera*, which recorded collections and illustrations of John Banister's plants from Virginia, and Maryland collections of Hugh Jones, William Vernon, and David Krieg. He would add to these data for the specimens from many sources in his own herbarium and data from plants collected by Lewis and Clark.

Although he had been working on this "Flora" with Pursh, he had other publications to see to. On 9 January 1810 after several requests from Judge Richard Peters to contribute a paper to the newly established journal of the Philadelphia Society for the Promotion of Agriculture, Barton read a paper on the usefulness of moles, which was then published in volume two of the Society's *Memoirs* (1810).

There were troublesome requests and a severe illness to impede progress. What was intended as an honor was presented to Barton. He may have hesitated when Nathaniel Greene M. Senter proposed dedicating his work on Hindustan to him. Senter's activities with the British Army, then the American, may already have raised patriotic suspicions in New England. Five years later he was to publish *A Vindication* of his own character.[2365] His letter reads:

> *Windham, Connecticut 15 Jan'y 1810*
>
> *Dear Sir*
>
> *I recd yours as of Octobre 5th & am happy in being honored with Permission to dedicate to you, the Labour of six years experience abroad, in Foreign Countries. You suggest the practicality of leading this work into Circles of Taste and Elegance, by selecting some other Patron whose Name would facilitate its progress through Society; had I not supposed the Name and Character of this respected Scholar, whom I now address, would have added a strength & conferred a Lustre upon it which otherwise it would not have possessed, I should decline the Request & the honour both—Whatever may be the merits of the Volumes, intended for the Press, the public always were and must be: the arbiters before whom everyone must submit their works—My intention in publishing it is as far as possible to amuse & inform the Western world respecting the Manners, Antiquities & Genius of the Natives of Hindustan. To rescue that antient & once*

2364 Ewan, "Barton's library."

2365 *A Vindication of the Character of Nathaniel Greene M. Senter against the charge of being a Spy and a traitor, with a Statement of his connexion with the British Government, from the year 1802 until 1805, and his obtaining a captaincy in the service of the United States, together with a variety of anecdotes respecting several officers of the government and army. Written by himself.* (Hallowell, Me., 1815), 64 pp. Sabin, *Dictionary*, 79150, with several other titles, although not *A Lecture on the Beauty, Principles and Importance of Agriculture* (Bangor, Me., 1818), 23 pp. LC. We were unable to find biographical material on this Senter.

powerful People from the Obloquy & Reproach which the politer Nations of Europe have hurled against her Government & Religion—I view Science as with you; India to be the Source of all the Elements of all our knowledge, our Religion & Superstition—The irregular Manner in which I present my Journal & noted my observations will be your apology for any Inaccuracies which may have crept into so miscelanious & various a work—I regret much the loss of some books & Papers on the Boligant Mountains in India when crossing thru with part of the British Army under the Command of the Crown & the enobled Sir Arthur Trellesley—they contained part of my Remarks, which since that misfortune, I have supplied from detached Papers and memory—

I have since my Return to America employed but a small portion of three years to forming and correcting these Sheets, most of the above period being spent in travelling to the Western States in an Excursion to the Spanish Settlements south of the United States—

The last Year I have attended to this Subject & shall endeavour in a few months to correct it for the public Eye—Perhaps you will consider it as some apology for want of Elegance & purity of Style which may be found with its Pages—when I inform you that I embarked from this Country at eighteen years of age, & before I was twenty three had passed over the foreign Countries mentioned in my Letter to you, & over the United States twice—The first time I was in the Western States I became acquainted with the Celebrated Bartram at his Gardens—Mr Hamilton the generous and polite Inhabitant of the splendid mansion near the Scuylkill River—That Season too I was honored with an Introduction to the Faculty of the City of Philadelphia when I attended the Lectures of the humane & learned Rush, Shippen & Woodhouse—

I have it in Contemplation to send my Papers to one of the best and most literary Printers in that City and would think it a great kindness if you would favor me with the Name of such a person—I consider that the literature of that place to be more elegant & polished than any City in America & in their publication of a work where unavoidably there must be collected various opinions respecting Religion, Government & Society, it is an important consideration that its first Introduction into the world, should be among those whose Sense, Manners, & Reading fit them for the perusal of so novel and miscelaneous a Work—Be so kind as to communicate to me the desired Information soon—Hoping you are well and all your Friends I remain With Sincere Respect and Esteem Your Obt. Servant Nathl G M Senter[2366]

We found no answer to Senter's letter. On 7 April Barton engaged Nuttall to embark on his collecting trip to the "Northwest." Nuttall was to relinquish all rights of publication, though he would share the specimens.[2367] His new assistant now on the way, Barton complained of his health to an unidentified Boston correspondent:

2366 Barton papers, APS. Senter's book on India seems not to have been published. Thomas Pennant's *The View of Hindoostan* (London, 2 vols.) appeared in 1798, and the *View of India extra Gangem, China, Japan* (London) in 1800, after his death. Both are parts of Pennant's *Outlines of the Globe*.

2367 Graustein, *Nuttall*, 39.

May 1810

Dear Sir,

I have received your kind letter by Mr. Welsh, to whom & to his family I shall be happy to be of service, in any way.

I thank you for the notices concerning the petechiae fever: and for the Journal,[2368] *a full accounting will be acceptable.*

Your kind inquiries concerning my health demand my warmest thanks. My health is, indeed, very delicate and I consider my life very precarious. But I feel persuaded that I may be essentially benefited by relaxation from business, and especially by a journey, which I undertake, in the hot weather. My mind is too incessantly occupied; 'Arte severa distentum,' as Dr. Boerhaave says of himself. I have so much in different ways, to do, that I know not what is relaxation. Even my lighter studies are laborious to my mind. I make them so, from a desire to do every thing which I attempt to do, pretty well. But this summer, if I live, 'novus nascitur ordo,' shall be my motto. However, I have said so fifty times before: and more than once before, I have said that I shall visit Boston, where I am well persuaded, that I have two or 3 choice friends who will be glad to see me.

Do remember me kindly to my good friend Dr. [Walter] *Channing. Tell him I wish him all happiness & success; and as a companion, one of the two fairest & best girls Massachusetts can afford. Tell him, also, not to forget me in his mineralogical excursions. The collection from his friend, Mr. Gibbs, I have never received: but should be glad to receive.*

What has become of Dr. [Thomas G.] *Keegan? I have been told he has gone to Halifax. If he be there, and you correspond with him, tell him he can be of use to me in sending me occasionally a few fine plants, the growth of the country. I understand there is at Halifax, a Mrs. Halliburton, who is a considerable proficient in botany. Adieu My best wishes attend you B.S.B.*[2369]

About this same time he scratched a note to an unnamed printer:

Dear Sir. Yesterday I received your letter, together with the printed sheets. I avail myself of the first moments of leisure or ability to answer the letter. You will please recollect that I am in wretched health, often confined to my house, and still more frequently incapable of going through even one half of the current business of the day.[2370]

He also wrote to Dr. C. B. Robinson of Fredericksburg, Virginia, on 11 May, "I have been obliged to go to bed, in consequence of illness. I beg you to excuse me, but let me request you to leave with my boy, your direction very particularly, & the bitters [?] shall be forwarded to you, in very good time. You may depend upon my attention to the business. Your sincere friend, &c."[2371] Robinson had likely been in Philadelphia on a visit.

2368 Of the American Academy of Arts and Science?

2369 Barton papers, APS, a copy. To Judge Davis? Keegan, of Maine, graduate of the University of Pennsylvania. (*Colonial Medicine*, 182).

2370 Barton papers, APS, a copy.

2371 Barton papers, APS, a copy.

When Dr. Alexander Stevens[2372] requested letters of introduction to Barton's friends and correspondents in Britain and Paris, Barton declined due to "the affair between the Professors and Mr. Napier,"[2373] and that he considered Stevens's part in the Hartford Convention "extremely improper."[2374] The Hartford Convention had been the result of New England resistance to commercial restrictions and embargoes, and the increasing power of the Southern States. Benjamin Waterhouse wrote from Cambridge 8 May 1810 to Lettsom describing the dissension. The two parties in Massachusetts, the Federalists, or English Party, and the Republicans, "most curiously balanced...the latter now predominated and partisans of England are daily losing ground." The English Party was too confident and too violent. "While one party is vociferating that we cannot live without England, the other are trying to demonstrate that we can."[2375] Although Barton could maintain a friendly correspondence with naturalists in Europe, he could not tolerate any American disloyalty to the Republicans. Was he also influenced by the fact that Stevens, as a student at the University of Pennsylvania, had demonstrated Rush's influence in his thesis "A Dissertation on the Proximate Cause of Inflammation, with an Attempt to establish a rational Plan of Cure," which had won Rush's high commendation?

Waterhouse had also added a bit of economic news of importance to Americans: that almost every ship was bringing Marino sheep from Spain or Portugal. "We may soon send Hispanico-American wool to England."

On Saturday morning field trips, besides expounding on the medical characteristics of the plants observed, Barton would discuss his own ideas of plant classification, yet would be careful to teach the Linnaean system while alerting pupils against accepting without question his own personal views. Always on the alert for new records, Barton recorded, "May 20, 1810. Yesterday, among the rocks, along the Wissahickon, with a part of my class, I observed a great deal of Mitella diphylla in flower..."[2376]

In July of 1810 Barton set out presumably to benefit his health, and to extend Pursh's observations on the trip he had made in 1806. Barton's journal, incomplete, is at the Historical Society of Pennsylvania, probably dismembered for its botanical observations. His first collecting stop seems to have been Parnel Knob, Franklin County, Pennsylvania, where he collected about forty-nine species. No. 41 was "Castanea americana[2377] (mihi), or common chestnut in flower." One of the persons travelling with him sometime remarked that "the flowers of chinquapin smell very similar to semen masculinum...This remark has been made of the flowers of the chestnut also." He also noticed "No. 43. Helianthus divaricatus? in flower: the very same which I observed on the North Mountain in my ride to Capon Springs in 1802," and "46. Mitella? or Heuchera...The very same plant which I observed in 1802 at Harper's Ferry."

On 13 July, while stopping in the vicinity of Paris, Virginia, Barton composed a letter to Jefferson on American and Asiatic mammoths, much of the material influenced by a letter

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2372 Alexander Hogdon Stevens (1789–1869) had begun his studies in New York with Dr. Edward Miller of the College of Physicians and Surgeons, but had transferred to the University of Pennsylvania, taking his degree in 1811. In 1812, on his way to Europe as a carrier of messages, Stevens was captured and imprisoned in England. On his release he studied with Dr. John Abernathy (1763–1831), a native of northern Ireland and a student of Dr. John Hunter, then with Sir Ashley Cooper of St. Thomas and of Guy's hospitals. In Paris he studied under Alexis Boyer (1760–1833) whose work he later translated. Gertrude L. Annan in *DAB*.

2373 Mr. Napier was either of two brothers. Sir Charles James Napier (1782–1853) began a military career in Ireland at the period of the rebellion. During a period of recovery from wounds in London, he wrote on colonization, the state of Ireland, military law and engineering. In 1811 he joined Wellington and continued in the military. Sir William Francis Patrick Napier (1785–1860) was also a military man and historian. Whether through their writings or a visit to New England, one of these Irishmen fired antagonism toward England. (Elihu Rich, *Cyclopedia of Biography*, London, 1853). Both are in *DNB*.

2374 Barton papers, APS, a copy.

2375 Linnean Society, London.

2376 Barton papers, APS, Misc. notes no. 9. Miterwort or Bishop's cap.

2377 [*Castanea dentata* (Marshall) Borkh., American Chestnut. IPNI. ITIS.]

from Tilesius. This appeared in *Port Folio* that year,[2378] and also, according to Barton, in *National Intelligencer*. Barton also included it in his *Archaeologiae Americanae*, pp. 28–33. Journeying on he visited his brother Richard on the farm near Winchester; and on the 18th Rockfish Gap off the Blue Ridge, where he collected *Veronica anagallis-aquatica*, Brooklime, or Brook Pimpernel.[2379]

On 22 July, "Instead of taking the Main road from this to Union I preferred the mountain path, in which I thought my chances of finding something new would be greater," but he got lost and had to spend the night at a farmhouse. On the 23rd he arrived at Union, Monroe County, now in West Virginia, to find a camp meeting in progress, and so he spent two days working on his specimens and writing. On Monday the 25th he ordered a pair of pantaloons made, and on Wednesday he left Union, visited a fine Sulphur Spring, crossed Muddy Creek and Peters Mountain. He found "sweet-smelling" *Cypripedium acaule*, the Yellow Ladyslipper orchid, in seed. On Friday he arrived at General Preston's, where there was a sick child. "I had therefore, to creep in a corner, and to make out as well as I could." On Sunday the 31st he wrote his intention to visit Salt Pond, and on Tuesday August 2, "when we arrived there, I was almost drunk with admiration in contemplating a large sheet of water, which deserved to be called a lake." He devoted several pages to the visit.[2380]

At the American Philosophical Society, among Barton's "Miscellaneous papers," is a stitched manuscript, unfinished, revised from his journal, intended it would seem for publication. It gives us a little new insight into Barton's personality with his description of Mrs. Madison and his pride in associating with presidents. It also demonstrates his pride in belonging to a republic.

> *When I left Gordon's, I was in hopes, that I should have arrived at the Presidents, in time to take breakfast with the family. But in this supposition, I was mistaken. Breakfast was over, and the President and his Lady were out walking. In a very short time, however, Mrs. Madison returned, and when she asked if I had breakfasted, my stomach,–always keen when I travel,–could not permit me to tell a falsehood. In a few minutes, I sat down with Mrs. Madison, to an excellent table, well provided with coffee, &c. My only assistant on this occasion, was Mrs. Madison, herself, who did the honours at the table. A fact which may be deemed incurious in countries less republican than those of the United States. But Mrs. Madison can accomodate herself, with the most easy elegance, to the Society of those whose station is even less elevated than that of a Professor of Medicine in the University of Pennsylvania. She is, indeed, a very extraordinary woman. She would grace, and add dignity to, the table or throne of an emperor and she could descend, without difficulty, to preside over the simple board of the rude cabin of the peasant.*
>
> *My stay at the Madison's though short, was on many respects, agreeable. Our conversation was various, on politics, literature, and science. He is, understandably a man of very considerable information. His manner; though somewhat cold, or reserved, is extremely pleasing. It is calculated to inspire you with great respect for him. His countenance, though not animated, is pleasing, and his smile in particular, is the smile of*

2378 *Port Folio* ser. 3. 4 (1810): 340–344.

2379 *Flora Virginica*, 3: "I collected this species, in flower, on the Blue ridge, in Rockfish Gap, on 18 July, 1810. It is doubtless, a common plant in many parts of Virginia, as it is in Pennsylvania, & always growing in or about springs, and other wet places."

2380 On Salt Pond, now called Mountain Lake, Anna M. Vail, *Gard. & Forest* 3 (1890): 367–368. In 1858 Wm. M. Canby, botanist, friend of Sargent, visited Salt Pond Mountain. Alton McCaleb Harvill, Jr., and others, *Atlas of Virginia Flora* (Farmville, Va., 1977, 4).

benevolence and virtue. No man in the smallest degree, acquainted with physiogn[omy] *would hesitate to say that James Madison is a man of strict integrity and virtue.*

I have known Mr. Madison for many years. While a member of congress, I frequently met him at the house of my uncle the late Dr. David Rittenhouse and I visited him at his present place of residence in Orange County, while he was Secretary of State, in 1802. I never saw him to greater advantage than on the present occasion. The dignified station which he holds as the first magistrate of the United States has not clothed him with any artifical habits or manners. In fact, I never saw him more familiar, less retired in his manners. He treated me with the most marked friendship; and with no man, in a station so dignified could I find myself so much at ease, except, indeed with the most distinguished personage who preceded him in the office of chief magistrate of the United States.

August 3d Thursday [1810], *after breakfast, I took leave of Mr. Madison, and his family. As the roads in Virginia are too frequently difficult to a stranger, the President very kindly made out for me a little manuscript map of the right tract to Stevensburgh* [Culpepper County], *and this map was very useful to me. Indeed, without this guide, I should often have missed my road, notwithstanding the occasional board directions which one meets with.*

At the distance of about [blank] *miles from the President's, I came to Orange-Court House, where I made but a few moments delay. This, though the county-town, is a very inconsiderable place—Saw Saponaria officinalis in flower in the town...*

As I approached towards Stevensburgh I saw a good deal of Martynia proboscidea[2381] *in flower and in green pericarp. The plant emitted a strong odour. I think the plant must be considered as a native of Virginia, although not noticed in the original Flora Virginica...*

Took dinner at Stevensburgh, a small and I think evidently declining village, beautifully situated, and affording a fine view of the Blue-Ridge, distant about [blank] *miles. My diner was a wretched one. Here I saw two negroe men, well secured with irons, and followed by a man on horseback, who, it seems, is their purchaser, and was conducting them to Tenessee.*

After dinner, instead of pursuing the more direct rout over the Blue-Ridge by Chester's gap, I determined to visit my former pupil and friend Dr. Thomas Knox, who resides on the Beverley-branch of the Rappahannoc at the distance of [blank] *miles from Stevensburgh. I reached his house a good while after sun-set, having previously rode the Beverley, which runs near to the house...*

Barton then added a note on "Salamander horrida, or maxima," *Cryptobranchus.*[2382]

Friday 4th. In the morning, after breakfast, I proceeded on my journey to Ashbey's Gap. On the banks of the Beverley near Dr. Knox's house, I observed a good deal of Verbascum lychnitis?[2383] *in flower. I observed the same plant, in the ride from Stevensburgh.—The day very warm, but much of my ride was through woods. Immense quantities of Polygala verticillata*

2381 *Martynia proboscidea* Gloxin, the Unicorn plant. Barton was correct in thinking it a native.

2382 For a drawing and description of *Cryptobranchus alleganiensis* see Thomas C. Quirk, Jr., *Reptiles and Amphibians Coloring Book* (New York, 1981).

2383 *Verbascum lychnitis* L., an early record of the White Mullein.

[Whorled Milkwort], *especially as far as Ward's, and of Stilosanthes [sic, Stylosanthes] elatior. I think I observed two species of this genus, at all events much erect, and some procumbent.*[2384] *In the same ride, immense quantities of Isanthus*[2385] *and Cuphea viscosissima.*[2386] *The first of these plants is called in this part of Virginia, 'Blue Centory.' My ride through Culpepper was, in one respect, very interesting to me. Ten years had now elapsed since my former and first visit to this part of Virginia. I found the country evidently and considerably improved.*

...At the door of [Hand's] *house, stands Populus balsamifera, which I presume is rather a rare tree in this part of the country. From this spot, it has been imported into Orange County. Gordon received his from Hand's. Mr. Madison called this tree 'Balsam-Poplar.' It is the very species which has been introduced into the streets of Philadelphia, but which, notwithstanding the high praises that have been bestowed upon it, seems to little or no advantage over the foreign Po*[plar. End as preserved].[2387]

On Barton's return through Frederick County, where he visited his brother Richard near Winchester, he stopped in Lancaster to visit relatives and Muhlenberg. On 27 August Muhlenberg wrote to Stephen Elliott: "Dr. Barton was lately with me. He is now publishing the first volume of his Flora from the Monandria-Octandria, Grasses excepted which he leaves untouched. By what I have seen in MS it will be a good work some Rubbish excepted which he takes from old Books out of date."[2388] Muhlenberg was referring to Barton's new edition of *Flora Virginica* and to their differences in philosophy. Barton saw the significance of giving the old synonyms and references, which aid in an understanding of the history of a species and which are essential for any scientific flora. Even omitting the grasses, which were a particular interest to Muhlenberg, Barton had embarked on too great a task for health, energy, and the time he could take from his classes. On 17 December Muhlenberg wrote Elliott again:

Early in October I was in Philadelphia on a visit and added about 100 plants to my herbarium. Mr. Lyon has a notable collection, chiefly of southern plants. Mr. McMahon goes on very briskly, D. Barton has erected a small garden and greenhouse near his dwelling. Mr. Enslin is almost gone and past recovery of a consumption. Mr. Hamilton very near the same without much hope, and his botanical garden hastening into ruin.[2389]

As a courtesy to one of his fellow professors, Barton wrote to James Madison:

The President of the United States
Philadelphia, September 9, 1810

Sir, Mr. John Andrews, Junr.,[2390] *of Philadelphia, a young man of the fairest name & character. of much commercial information, and universally esteemed by those who have the pleasure of his acquaintance, has, I*

2384 *Stylosanthes elatior* Swartz and *S. hispida* Michx.

2385 The genus *Isanthus* named by Michaux. *Isanthus brachiatus* (L.) Britton, Stern & Poggenb., False Pennyroyal.

2386 [*Cuphea viscosissima*, Jacquin, 1772, Blue Waxweed. IPNI. ITIS.]

2387 Hamilton introduced the "Lombardy poplar in 1784" (Hedrick, *Horticulture*, 46). The American Balsam Poplar is *Populus balsamifera*.

2388 Graustein, "Barton," 421.

2389 HUH.

2390 The son of Rev. John Andrews (1746–1813), graduate of Philadelphia College in 1764, ordained Episcopal clergyman in London in 1766, taught at York Academy, then Professor of Moral Philosophy at the University of Pennsylvania, 1791–1812.

understand, applied to you through a number of respectable merchants and others in this city, for the place of 'Commercial agent from the United-States, to Rio Janiero, in Brasil.' I am persuaded, that the appointment of Mr. Andrews to this station, would be an appointment of rare importance to the mercantile interests of the country.

I am not insensible, Sir, how much your time, so interesting to the public, must be encroached upon by applications of this nature. I beg you to receive as my apologies for the liberty I take, in addressing you, in behalf of Mr. Andrews, my wish, on all occasions, to be useful to my country; my knowledge of the high worth of the applicant; and the great obligation I am under to his venerable and learned father,—the Revd. Dr. Andrews, as the pupil of my Father, and my earliest instructor in some of the branches of education, which have ever been my pride, and which now constitute, as they have ever constituted, a portion of my real happiness. I am, Dear Sir, with the highest respect, Your very obedient Servant, &c.

Benjamin Smith Barton

Exact copy.[2391]

Again working on his "Flora," by now his updating of Gronovius's *Flora Virginica*, Barton wrote in answer to a letter from Dr. Samuel Prescott Hildreth[2392] of Marietta, Ohio, of 20 August, "received Sept. 24, 1810." Hildreth had sent him specimens of minerals, one bismuth, which Barton acknowledged the same day, stressing his current interest:

You can greatly assist me in my researches into the natural history of the U. States. Besides minerals, I am anxious to procure specimens of your plants, as I am actually printing a work on the vegetables of our country. The plants about Marietta must be interesting. Nothing is more easy than the preservation of plants (for examination) in blotting paper. With each specimen, put a label, mentioning when and where found, its common name, &c The smaller plants will be most likely to be new to me: or, at least, curious. I beg you, Sir, to keep this request in mind; and for your attentions to me, I shall be truly glad to make any returns in my power. This autumn, you might, without difficulty, procure for me seeds of some of your more curious, beautiful, or useful plants. I beg you, Sir, to command my services, and be assured of my regards & thanks, B. S. Barton[2393]

There seems to have been no response. Barton also wrote his friend of Edinburgh student days, Thomas M. Randolph, who replied 25 October:

I am sorry to inform you of my disappointment in the search for the Commelina you said you saw on the bank of Rivanna near the road from Monticello. Before I had the honour to receive your letter it was too far gone to be distinguished with that perfect certainty I wished by one to whom it was not before known. In the search for it I met with a

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2391 Barton papers, APS.

2392 S. P. Hildreth (1783–1863), born in Methuen, Massachusetts, studied medicine under Dr. Kittridge of Andover, and began his practice in New Hampshire, but migrated to Ohio in 1806, soon moving to Marietta. Over the years he kept records of flowering times, temperatures, and rainfall, sending specimens and articles to Silliman for publication in his *Journal*. He gave his rich scientific library and his collections to Marietta College, and was author of a number of books. Drake, *Dictionary*; Albert P. Mathews in *DAB*.

2393 Barton papers, APS.

> *Caryophyllous plant which puzzled me greatly. It has the Calyx of* [the Pink] *Dianthus but invariably without the squamae at the base. With the general appearance of a Silene petalis coronatis ad faucem but is allways digynious and has the 1-locular capsule. I never saw a Saponaria and therefore cannot conclude whether it be one or an annomaly. The calyx is a little inflated. That I believe is not uncommon in the natural class to which this belongs, as it is placed in the system. Thus I am certain you must know it, for it is a common plant upon the sandy flats of Rivanna and is conspicuous.*[2394]

Had Randolph sent a specimen? Otherwise Barton too was surely puzzled.

In commenting on a paper on torpidity[2395] that appeared this year Barton wrote, "I hope to be able, at some future period, to publish the full result of my researches and experiments." Waterhouse had observed to Lettsom that year that "never was there a young country making such rapid strides to greatness than ours."

The Preface to the third edition of *Collections for a Materia Medica* was dated 12 December 1810. It had grown from forty-nine pages in 1798 to 120 pages. Barton included from the original Preface:

> *When it is considered how little has hitherto been done in this way, every attempt (mine is a humble one) should be candidly received. I do not mean that its faults should not be pointed out."*

Followed by an addition new to the third edition's Preface:

> *Whatever may be the reception of this essay by the public, whether favourable or unfavourable, I shall pursue my inquiries concerning the nature and properties of the natural productions of my native country. I shall pursue them, because there is at least a possibility that they may ultimately tend to something useful: and because I have the experience of several years to teach me, that the cultivation of science is the extension of my happiness.*

Barton's illness in 1810, perhaps increased by his conflict with Rush, had delayed progress on his "Flora." By October he had come into possession of Lewis's natural history journals, but his work on them is not evident. He was concerned for much of 1811 with Nuttall's progress in the Northwest, information from which he would no doubt add to Lewis's and his "Flora." There were intrusions on his time. "Disturbances" among university students elicited a letter of advice.

He was working on several titles that would appear in the ensuing months, "Ladies' Botany" would not.

The year 1812 saw the last of Barton's long dreamed of "Flora." Why the end of the *Prodromus*? Had it been his growing dissatisfaction with Pursh, and Pursh's leaving? Was the task too great for the time and energy he now possessed? Had it possibly have been the influence of a new arrival in the city, an advocate of the system of Jussieu, Corrêa da Serra? He left no such suggestion. In his *Elements*, a new edition which appeared this year, Barton

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2394 Barton papers, APS.

2395 Is this from John Reeves (1774–1856)? A naturalist, he attended Christ's Hospital London and became inspector of tea in China for the East India Company, 1812–1831. *DNB*; Barbara Mearns and Richard Mearns, *Biographies for birdwatchers: The lives of those commemorated in Western Palearctic bird names* (London & San Diego, 1988), 463; Mildred Archer, *Natural History Drawings in the India Office Library* (London, 1962), 60; Bretschneider, *China* 1: 256.

had written, p. xvii: "I have been occupied in attending to the printing of several other works, much more original in their nature, and from which I venture to promise myself a more solid reputation: viz. too distinct Florae, one of six of the States of the American Union; one of the state of Virginia." Then he mentioned *Cullen's Treatise, Memoir concerning the Hell-Bender*, and Muscicapae.[2396] "All of these works are actually, at this time in the press, and some of them are nearly finished."

For whatever reason, Barton decided to update Gronovius's (and Clayton's) *Flora Virginica* (1743). His own copy out on loan, he borrowed one from Thomas M. Randolph. He covered only the first four Linnaean classes—not even reaching as far as the *Prodromus*, which by 1805 had five classes, and when he stopped, several more. In this *Flora Virginica* Barton cites ten names from the *Prodromus* with exact fascicle and page numbers "which since they had already been printed, he was able to do, even if they were not yet published."[2397] Three genera in fascicle two had appeared in *Philadelphia Medical and Physical Journal*: *Mitchella*, *Callicarpa*, and *Pothos* (*Dracontium*). Repeated from the *Prodromus*: "Monarda varians Bart. Prod. Fl. Pennsylv. 1: 36." To a proof-sheet he had added "Monarda varians mihi Journey of 1805 BSB."

In his preface Barton explained that he had contemplated a new edition of *Flora Virginica* "as early as 1794" since this work "of very considerable merit" is becoming scarce. Though "many botanists...have greatly extended our knowledge" the work is still useful. He was "not a little solicitous for the reputation of Clayton Himself." Barton prepared to "make some,—perhaps considerable,—additions," yet, "my professional engagements, my duties as a teacher, my bad health, and the diversity of my pursuits, have all conspired to prevent me from accomplishing one of my favorite literary objects. And it is with no small difficulty that I now present to the public a First Part of my plan." The first and only part.

He had changed nothing of Clayton's work, though he did not accept all of Gronovius's synonyms. He found it impossible to follow Linnaeus merely in "the number, the proportion, &C., &c., of the stamens...Nothing will more effectually contribute to the downfall of the Linnaean method," than authors disagreeing, "a method generally artificial, and very frequently irregular." There will be accessions to the old work:

> *My journeys, through various parts of this state, and my inquiries, for several years, into the geographical diffusion of American plants, have enabled me to augment, so greatly, the catalogue of vegetables of Virginia. Nor must I omit to say that I have derived great assistance from the large herbaria which have either been collected at my expense; or liberally communicated to me by my pupils, and others.*

Not always content with the *short* descriptions of earlier botanists, Barton included a description of his own identified with a B; and he often added a detailed English description, especially for the benefit of students. He usually deferred adding Indian names, "a favorite pursuit," [*sic*?] for another time. He has often been explicit in giving particular habitats; and of times of flowering, "not without difficulties" because of ocean and mountains. At the end of the work he planned a calendar of times of flowering, of leafing and defoliation for different parts of the state—a plan unfulfilled. He omitted Gronovius's map as "being extremely rude."

The "others" mentioned above included Pursh and Nuttall, who now had gone. Pursh's *Flora Americae Septentrionalis* would appear in 1814, based largely on the collecting and curating he had done for Barton, and on the fragments of specimens from Barton's correspondents and the Lewis and Clark plants—fragments he had pilfered from Barton's herbarium. *Flora Virginica* contains abundant references to contemporary authors: Michaux, Walter, John Bartram, Abbot, Persoon, Muhlenberg, Josslyn, Schoepf, and "my

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2396 *Philos. Mag.* 39(1812): 107-116.

2397 McPhail, *Barton*, details bibliographic particulars for the *Prodromus* and other major botanical works.

Massachusetts friend," Cutler. He referred to his own travels in New York and Virginia, often with dates of his visits, but he makes only one mention of Pursh, on page twenty-one.

On "Saturday, June 20, 1812. I this day closed my course in Botany by a lecture at the University & an excursion to Landreth's garden. This is the first time, I have ever taken my class to Landreth's—The permission to take it, I consider a valuable acquisition to my class."[2398] So occupied with publications and teaching this year, Barton impressed visitors, especially Muhlenberg, as particularly inhospitable. On 22 June in a letter remarking on persons seen and botanical events while "on a journey to Philadelphia" Muhlenberg wrote "D Barton not willing to be seen." However he was to report to Stephen Elliott 5 October that he had seen "1 volume of his now christened Flora virginica," but that "unluckily we can not get to see anything of this work. I had a distant look but there was nothing like a multum in parvo," and that Barton "had sent every copy to London from whence we may reimport it. Why? No body can say. If it is the same he showed me at a Distance it will be a grand compilation of all Synonyms from Gronovius, Plukenet, Willdenow—with a few Emendations Ellucidations and—Let it be so. I find it extremely difficult to get even a small Catalogue printed. However my Trouble is richly repaid by the Pleasure I find in the pursuit of Science, and the Friendship of my valuable Correspondents."[2399]

Barton had sent a copy of his *Flora Virginica* to Persoon in Paris, who wrote Muhlenberg in 1814 for a judgement of the work, but in that letter Muhlenberg was confusing *Flora Virginica* with the incomplete *Prodromus*, which had begun publication in London while Barton was a student at Edinburgh.

During these frustratingly busy days how warmly had he received the strangers for whom Richard C. Bowles wrote from Goochland, Virginia, 8 May 1812:

> *I know no person who could aid them in making such a visit satisfactory as yourself. Should you find it convenient to render them attentions of this kind while in Philadelphia it will be considered a large addition to the remembered stock of hospitable attention bestowed on me personally when attending your lectures.*[2400]

A disappointing review of his *New Views* by Charles Caldwell appeared in the June 1812 number of *Port Folio*. Caldwell first discussed settlement in the New World, then mentions Barton "from whose rich, multifarious stores of knowledge, his country cherishes the loftiest expectations," (p. 514). He then disagrees with Barton's hypothesis about the migration of the American Indian from Asia; that the stalwart Indian could have descended from the stunted beings of northern Asia, or navigated the water between, he could not believe. He does not himself see the occasional similarities of words as evidence of relationship. How had Barton reacted to "the stunted beings"?

In June 1812 Barton received an eminent visitor, Corrêa da Serra, about whom more later. He was also ill "during the night, with violent Haemoptisis" or spitting of blood, according to his nephew W. P. C. Barton. After reading an article by Sir Joseph Banks, Barton dashed off a short paper on the origin of the White potato, sending it to England so that it appeared in *A Journal of Natural Philosophy, Chemistry and the Arts* (1812). Banks was still confused, as writers had been from the time of Gerard, over the Andean White, and the lowland sweet potato.[2401] The fascination of "Catchfly" plants, Muscicapae, led him to submit a paper to the *Philosophical Magazine* rather than wait for the delays and uncertainties

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2398 Barton papers, APS.

2399 HUH.

2400 Barton papers, APS.

2401 Ewan & Ewan, *Banister*, 369–370, gives a brief summary of the confusion of "potatoes." The Irish or White Potato, *Solanum tuberosum*, was described by Linnaeus, 1753. Also describing the sweet potato as *Convolvulus batatas* L., this was later recognized as *Ipomoea batatas* (L.) Lam., 1793.

of the American Philosophical Society's *Transactions*. Published in London it would also have a much larger distribution. The entrapment of insects by *Sarracenia*, one of the Muscicapae, he suggested, is somehow or other subservient to the business of vegetable nutrition. In a review of *Cullen's Treatise*, Lemuel Kollock in *Medical Repository* thought Barton's added notes so similar in style to Cullen's that his additions should all have been in footnotes.

Hosack visited Philadelphia 17 July to attend a meeting of the American Philosophical Society, staying with Rush.[2402] On 18 June he had sent a note to Barton that he would be glad to divide plants from France, many of which were hothouse plants, between the Hospital and the Botanic Garden of the City, if Barton had the means of cultivating them.[2403] Barton was developing his own garden and greenhouse because of the inadequacies of the hospital growing plot, and so the plants may have enriched his collection. The miserable affair with mineralogist Godon also occurred in 1812. It is detailed in Chapter XXI. There was also the affair with Shecut.

John Linnaeus Edward Whitridge Shecut (1770–1836),[2404] of Swiss descent, began the study of medicine under Dr. Ramsay and is said to have continued study in Philadelphia. He developed an extensive practice in Charleston, South Carolina, where in 1813 he organized the Antiquarian Society, the nucleus of the Charleston Museum. He rejected bleeding and the use of mercury, and used electricity in medical experiments. Of his *Flora Carolinaeensis* (Charleston, S.C., 1806) only one volume was completed. Darlington wrote that "pecuniary embarrassments" had obliged him to leave the work unfinished. Baldwin had found that Shecut and Noisette "have at least some zeal for botany." Jefferson in thanking Shecut for a gift copy told him "I have been in the constant hope of seeing the 2d vol. of your excellent work." Elliott, in writing to Muhlenberg, 14 February, told him that Shecut "in his introduction borrowed so much from Dr. Barton that the dr not very civilly threatened him with a prosecution; second part mostly from Encylc. B?"[2405]

Was Elliott referring to David Brewster, *The American Edition of the New Edinburgh Encyclopedia* (Philadelphia, 1812), containing unsigned natural history articles by Barton; had Shecut seen notes in manuscript? Or had Elliott confused *Pinkerton's Geography* to which Barton had added notes? David Brewster (1781–1868) was a Scottish physicist who, despite not being able to find a University position, won many honors for his numerous writings.[2406] In his early years he edited a number of works, one, the *New Edinburgh Encyclopedia* with the Philadelphia edition.

John Eatton LeConte Jr. (1784–1860),[2407] best known for his zoological interests, especially insects, early also pursued plant studies and published a florula of New York City.[2408] On 8 September 1812 he wrote to Barton, with whom he shared a panoply of interests. Regretting the necessity of canceling a trip to Philadelphia, he sent observations on bobolinks;[2409] see Chapter XXIV, Birds.

LeConte then sent a synopsis of the insectivorous genus *Utricularia*, presumably confident that Barton would include it in his *Flora*. In Latin he described five species. *Utricularia ceratophylla* and *U. setacea* had been published by Michaux in 1803.[2410] Two

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2402 A. E. Hosack in Gross, *Lives*, 314.

2403 Robbins, *Hosack*, 95.

2404 Arney R. Childs in *DAB*.

2405 HUH.

2406 *DNB*.

2407 Lester D. Stephens, *Joseph LeConte* (Baton Rouge, 1982), 2 and passim.

2408 "Catalogus plantarum quas sponte crescentes in insula noveboraco observavit," *Amer. Med. Philos. Reg.* (1811) 2: 134–142.

2409 [Also Reed-birds or Rice-birds, Wilson termed these *Emberiza oryzivora*, *Amer. Orn.* ii, 48. Bobolinks are now known as *Dolichonyx oryzivorus* L. AOU.]

2410 [Michaux's species refer today to *Utricularia inflata* Walter and *U. subulata* L., the Swollen and Zigzag Bladderworts, respectively. IPNI. ITIS. TROPICOS.]

species named by LeConte would appear in Elliott's *Sketch*,[2411] volume one (1821), 21: *U. saccata*, and *U. longirostris*; LeConte would publish *U. integra* in *Annals of the New York Lyceum of Natural History* 1 (1824): 76, of which he had been a founder.[2412] During his lifetime LeConte published twelve papers on plants, eight on mammals, eleven on reptiles and amphibians, five on insects, two on crustaceans, one each on birds and on medicine. He ended his letter "Hoping to have the pleasure of soon seeing you in Philadelphia."[2413]

A new recognition from abroad soothed the anguished rejection growing among some in his own land. Barton was elected a member of the Regia Scientarium Academia Borrussica, Berlin, July 1812, the diploma signed by the Secretary Erwan, Tralles, Amcinon, and Buttman.[2414] Leschenault had remembered with pleasure Barton's hospitality on his visit in 1807 and so had proposed him.

The enthusiasm Barton had imparted to his botany classes, whether on a visit to Landreth's, to the "Woodlands" of William Hamilton, to Bartrams' garden, or along the Schuylkill, the Delaware, or further afield, was described by one of his last pupils, Charles Wilkins Short, to his brother back in Kentucky, 24 April 1814:

> *In these excursions we reduce to actual practice on any plant that presents those doctrines which we have heard during the week—It is indeed...a highly delightful study but I believe that our venerable and eminent preceptor would make anything so. I have seen him take up a poplar leaf which I had trodden on, and thought destitute of every source of enquiry, and talk most earnestly and eloquently for a quarter of an hour on it...*[2415]

At long last volume two of Barton's *Elements of Botany* appeared with the hopeful notice following the index: "The Botanical lectures commence, annually between the 10th and 16th of April, and continue two months. Including the excursions, the Professor delivers at least two lectures every week." His paper on the opossum appeared in German translation. A new edition of his *Memoir concerning various Species of Serpents* appeared in 1814 with Professor Zimmermann's notes added. This edition was dedicated to Lacépède, whom he hoped to meet in Paris, and read in part:

> *For more than twenty years of my life, you have honored me with your correspondence while your letters have instructed me, they have ever stimulated me to new exertions in the walks of my favorite studies: those studies which, in an earlier and less prosperous period of my life, were my solace and delight, even in the midst of poverty and cares.*

Then turning to the subject of "fascination" he wrote on page eight:

> *I have known this prejudice* [fascination] *to be so deeply and powerfully rooted, as to mock the light and sureness of facts, and all the strength of reasoning.*

And on page ten he expressed his philosophy:

2411 *Sketch of the Botany of South Carolina and Georgia* (Charleston, S.C., 1821–1824, 2 vols., facsimile, Joseph Ewan, ed., New York, 1971).

2412 [*Utricularia saccata* refers today to *U. purpurea* Walter, the Eastern Purple Bladderwort. LeConte's *Utricularia integra* later submerged in *U. striata* LeConte & Torrey, the Striped Bladderwort. ITIS. IPNI. TROPICOS.]

2413 Barton papers, APS.

2414 Laid in with Barton's Journals of 1798, 1802, etc. HSP.

2415 To John Cleaves Short. LC, Manuscript Division.

> *The human mind, unenlightened by science, or by considered reflection is a soil rich in the weeds of superstitions and credulity. It is ever prone to believe in the wonderful, even when this belief...brings with it fears, and cares, and misery. The bondage of the mind is great and heavy. Neither religion nor virtue can give it freedom...How important then...is the enlargement of the mind by science.*

This was the mature professor writing.

Andrew Hamilton (a nephew of the deceased William Hamilton of the "Woodlands") wrote 4 March 1814 to Barton, "Your plants have been transplanted & are in good health."[2416] What plants? Had Barton gained them in the disposal of material from Hamilton's greenhouse or garden? Surely, for Barton now had his own greenhouse and garden. On 15 April Corrêa da Serra was in Philadelphia, rooming at the same house as Darlington, and there were visits with Barton.

A proposal for the publication of an American edition of the popular Miller's *Gardener's Dictionary*, the most important reference book for plant lore and for Barton's aid in promoting it, came from Caspar Wistar Eddy (1790–1828), nephew by marriage and pupil of David Hosack. Eddy had graduated M.D. 1811 from the College of Physicians and Surgeons, New York.[2417] In 1801 he had prepared a catalog of plants growing spontaneously in the vicinity of "Plandome," North Hampstead, Nassau County on Long Island, the home of his uncle, Samuel L. Mitchill, who published it in *Medical Repository*.[2418]

Eddy accompanied Pursh, LeConte, and Charles Whitlow on their field trip to the New Jersey pine barrens in 1808. Quaker Bridge won distinction for being the type locality of the "singular little fern," *Schizaea pusilla* Pursh,[2419] "so small that it generally escapes the notice of the botanist, unless accident points it out" (Pursh, *Flora*, 657). John Torrey and his coterie believed Eddy was the "Curly-grass" discoverer. He and William Cooper visited Quaker Bridge in 1818 and in 1855. With Asa Gray, as if by recompense, Torrey gave the name *Eddya* to a west Texan borage, now believed to be a synonym of *Coldenia*. Two distinctive pine barren natives are *Helonias bullata* (Figure 80) and *Lophiola aurea* (Figure 86), described and illustrated by Pursh, *Flora*, 224, pl. 6, as *Conostylis americana*.

Eddy's solicitation of Barton reads:

> *New York May 14th 1814*
>
> *Dear Sir*
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> *Having been solicited to edit an American Edition of Martyn's Miller's Gardener's & Botanical Dictionary, I take the liberty to beg your aid & assistance in the undertaking—the plan contemplated will be in the form of an appendix, and in alphabetical order so as to conform to the original.*
>
> *—But before any prospectus of the work could be issued, the patronage of gentlemen of your standing would be very desirable as I should wish to promise their assistance in that public manner as well as in the articles by them communicated—the names of those to whom I intend application are as follows. Dr. Barton, Dr. Muhlenberg—Dr. Mease, Dr. Mitchill, Mr. Collins, Mr. Le Conte, Dr. Bigelow, S. Elliot Esq., Mr. Bartram, Dr. Muller*[2420] *& Mr. Bradbury*[2421] *—if you can put me in the way of*

2416 Barton papers, APS.

2417 Meisel, *Bibliography* 3: 569; Robbins, *Hosack*, 66.

2418 *Med. Repos.* 11 (1807): 123–131.

2419 *Schizea pusilla* noticed by Witmer Stone, *Plants of Southern New Jersey* (Trenton, N.J., 1911 (1912)): 125–129. M. A. Chrysler and J. E. Edwards, *Ferns of New Jersey* (New Brunswick, N.J., 1967), 47–50, photos.

2420 "Dr. Muller" may have been a *lapsus typographicus* for Edward Miller, Mitchill's associate.

increasing this correspondence you will confer a particular favor—I contemplate having a list of such plants as do not occur in Miller, printed in an alphabetical form, in order the plants whose histories are required can be more readily known to the different contributors. I shall likewise consult Michaux on Forest trees—Barton's Collections towards a Materia Medica &c and all works likely to contain any information on the diffi. subjects of the Manufactures, arts, Agriculture & Medicine—wishing you health & prosperity, I am very respf. Yours Caspar Wistar Eddy[2422]

Miller had received nearly 200 different plant specimens from John Bartram. Barton surely owned an edition of the *Dictionary*, but no record survives. Eddy's letter represents the only record we know of an attempt to publish this work in America. Eddy's roster of eleven persons considered influential in promoting his project is notable, not only for the laureates, but for those not mentioned, chief among them his medical peer, David Hosack. He may already have been signed. Barton surely responded negatively; he was readying for his trip to Europe.

Young Thomas Pennant Barton spent a happy carefree summer in Lancaster with the family of his Uncle David Rittenhouse Barton and cousins. David wrote:

Lancaster August 1814

Dear Brother, Your favour of 31 ultimo by Pennant was duly recd. He appears happy and contented among us, and we shall do all in our power to make his time pass as agreeable as possible during his visit; add to which I find he has several companions here, who are his school mates, and consequently will contribute more to his pleasure than by being confined solely to the old folks...Pennant has seen your letter by brother William, with an enclosure. He enjoys perfect health, and is this day gone a fishing. Be under no apprehensions as to his swimming; those who can swim in the Delaware & Schuylkill, may with perfect safety venture in our little Conestoga. Inclosed is a letter from Pennant. Kitty and family join me in love to you all. I remain Dr. Brother Yours Affectionately, David R Barton[2423]

Pennant's next summer was to be full of care and concern for his ailing father.

As a postlude we read William Darlington's letter of 28 March 1816 to David Hosack, wherein he expressed the continuing need for an American flora:

...Something like a medium between Bigelow's Boston Flora & Persoon's Synopsis Plantarum...

My late excellent Friend, and lamented Benefactor (for so I may with propriety call him, in relation to my studies in Natural Science) Professor Barton had commenced the publication of an American Flora, on an extensive plan, which I think would have been very satisfactory, had he lived to complete it. He showed me several sheets of the work, as it came from the Press, and I believe he had it struck off, as far as the sixth or seventh Class, of the Sexual System of Linnaeus. What is intended to be done with it, by his representatives, I have no knowledge; but I despair of

2421 Rickett, "Bradbury," 62–64.

2422 Barton papers, APS.

2423 Barton papers, APS.

> *seeing it completed, unless it should fall into the hands of some one who possesses a competent ability, united with a public spirit equal to yours.*[2424]

Ten years later when Darlington published his florula of West Chester in a small edition, he wrote to Sir James Edward Smith from West Chester, Pennsylvania, 8 September 1826:

> *Sir, I am ambitious of the honor of offering for your acceptance, an Essay towards a Catalogue of the Phaenogamous Plants of the neighborhood in which I reside. It was originally intended as an effort to contribute some local information in furtherance of what has long been wanted; viz. a complete Flora of these States; But it has been delayed, from various causes, until the appearance of several valuable works has almost entirely superseded the little interest it might otherwise have possessed.*
>
> *...The sentiments of profound respect, which I have been taught to entertain for your character, by my Botanical Preceptor, the late Professor Barton, and which have been abundantly confirmed by the subsequent study of a number of your works, have made me desirous of testifying that respect,...*[2425]

Barton's place in systematic botany falls within at least three of Shetler's five periods in the history of the subject: *Descriptive* or exploratory; *floristic-phytogeographic*; and *ecosystematic*. Biosystematics (including chemosystematics) and genetics with its population studies, came later.[2426]

Saint-Pierre and *Studies of Nature*

Barton's part as editor and commentator for the first two volumes of his three-volume Philadelphia edition of *Studies of Nature*[2427] has been overlooked, although he contributed sixty-two footnotes, many of them long paragraphs. Rev. Henry Hunter of Scots-Church, London, had added only scattered comments and no natural history notes to his four-volume English translation of the *Études de la Nature* by the French civil engineer, a disciple of Rousseau, Jacques Henri Bernardin de Saint-Pierre (1737–1814). The first American edition of *Études de la Nature* had been published by the Boston bookseller Joseph Nancrede.[2428] Nancrede sent three copies to Moreau de Saint Mery, bookseller in Philadelphia, whose shop was a meeting place for French émigrés.

In Hunter's *Studies* was a series of topics having to do with various aspects of the immensity of nature, with replies refuting arguments against Providence, with the application of natural and moral law, and with suggestions for the education of youth. The fourth volume comprises a collection of exotic stories laced with anecdote and philosophy designed to show the perfection of Nature and divine concern for Man. The novel "Paul and Virginia" was deemed a masterpiece in the nineteenth century and was published separately in almost every European language. It was set in an exotic land that offered "a haven from the struggles of civilization" in a world of change.

2424 Darlington Correspondence, West Chester, Pennsylvania, Vol. 1, pp. 5, 7.

2425 Darlington Correspondence, pp. 129–131.

2426 S. G. Shetler, *Proc. Biol. Soc. Wash.* 82 (1969): 726.

2427 *Studies of Nature...with the additions of numerous notes...by Benjamin Smith Barton* (Philadelphia, Boston, New York & Albany, 1808, 3 vols.).

2428 *Botanical Harmony delineated, or Application of some general Laws of Nature...translated by Henry Hunter... first American Edition* (Worcester, Mass., 1797, 3 vols.). Madeleine B. Stern, "Joseph Nancrede, Franco-American Bookseller-Publisher, 1761–1841" in *Books and Book People in 19th-Century America* (New York, 1978), 47–117. Reprinted from *Pap. Bibliog. Soc. America* 70 (1976): 1–88. Nancrede had taught language until he became a bookseller.

Saint-Pierre's association with the Jardin Royal des Plantes Medicinales and with the naturalists Daubenton, Thouin, and Desfontaines had enriched his knowledge of natural history and the hundreds of plants woven into the *Études* in a conversational divertissement, but its author had not the knowledge gained from field experience for its American lore. Here another European, without adequate background, was picturing America, and so Barton entered upon another effort, encouraged by the publishers Birch and Small. John Nottingham Ware analyzed the vocabulary of Saint-Pierre listing names of plants and animals, citing canto and line for each word, without ever mentioning Barton's notes.[2429] Louis Roule wrote in 1930 on great French naturalists, and included Saint-Pierre;[2430] Jean Jacques Simon wrote *Bernardin de Saint-Pierre ou le Triumphe de Flore* (Paris, 1967). Both pointed out the many American natural history items included, but had not learned of Barton's contribution.

On 17 January 1808 Barton wrote a note to Birch and Small that in four months, or preferably five, he would, for the sum of $300, provide notes and illustrations, preface and introduction to an edition of *Studies*. Thirty dollars was to be taken out as the allowance for copies for his foreign friends, not for disposal in this country.[2431] Then:

> *July 4th 1808 Monday-morning I this day delivered into the hands of Messrs Birch & Small a large collection of ms. notes to the first vols. of Saint-Pierre's Studies, agreeably to an agreement. They are to pay me 300 dollars. I told them that I should hardly give them any notes to the 4th vol., but I agreed to keep it, & look into it.—the greater number of the notes which I gave them were written in the course of a very few days.*[2432]

Three days later Barton wrote to Professor Louis Hue Girardin[2433] in Baltimore to inquire whether he could supply a note on Saint-Pierre, and asked whether he was still living. The text was to be put to press in a few days. Barton omitted Hunter's preface, which contains his eulogy of the work: "what work of science displays a more sublime theology, inculcates a purer morality or breathes a more ardent and more expressive theology? [It] has furnished new arguments to combat Atheism, has established beyond power of contradiction the doctrine of a universal Providence." But he did continue with what Hunter in a footnote felt Saint-Pierre should have omitted: on kings and privilege, with Man as the King of France, though Barton added no comment.[2434]

We chose a few of the sixty-five of Barton's notes: they make good reading for their content and for a depiction of his character. His first addition is a "Note respecting the figure of the earth" (xlii–xliii) furnished "the Editor by Mr. Joseph Clay."[2435] Barton has included a reference to the *Transactions of the American Philosophical Society*, volume five.

2429 "The Vocabulary of Bernardin de Saint Pierre," *Johns Hopkins Stud. Rom. Lit. Lang.* 9 (1927): 41–59.

2430 Louis Roule, *Bernardin de Saint-Pierre et l'Harmonie de la Nature*, vol. 5 in *Histoire de la Nature vivante d'après l'Oeuvre des grands Naturalistes français* (Paris, 1930).

2431 Barton papers, APS.

2432 Barton, miscellaneous papers, APS.

2433 Saint-Pierre had met Girardin as Louis François Picot as a young man and had encouraged him to devote himself to historical writing.

2434 Barton, *Studies of Nature* 2: 451–461. A Philadelphia edition (1852) by W. A. Leary ends on p. 398 with the paragraph "Happy then," but omits the last pages of which Hunter had disapproved. There is a copy of Hunter's translation, ed. 5 (London, 1809) listed in Transylvania University, Medical Catalog, but we have not seen it.

2435 Joseph Clay (1769–1811), banker, skilled in math, chemistry, and politics, was elected to the APS 17 July 1799 at the same meeting with Latrobe, J. R. Coxe, and Wm. Maclure. On 3 Jan 1800 he was elected a secretary of the Society and served on committees as late as May 1810 (APS, "Minutes," passim). From 1803–1808 he was in Congress. Rush eulogizes him in his Commonplace book (Corner, *Rush*, 318).

Barton's Footnotes

From Volume 1:

p. 5. Barton gives his preferences for the translation of Linnaean terms, anther, etc.

p. 14. Saint-Pierre had expressed the hope that some naturalist would describe the intricacies of insect behavior, friendships and feuds. Barton responded: "I flatter myself that some of the views of Saint-Pierre will be accomplished, in a work in which I have long been engaged; 'On the Instincts and Manners of all the known Families of Animals'!"

p. 19. Barton cites Indian names reflecting landscape: Mississippi, Monongahela, Roanoke, etc., the footnote a full half page.

p. 34. The hummingbird or "bird-fly" is not restricted to *Bignonia* [Campsis] *radicans*, but also consumes insects; Barton corrects.

p. 53. Barton adds to Saint-Pierre's description of the movement of leaves of *Hedysarum gyrans* of India.[2436]

p. 154. Barton disagrees that "every species of plant once created still exists." What of fossil impressions of extinct plants? He predicts the disappearance of *Talinum* and perhaps *Dionaea*.

p. 215. Saint-Pierre suggests the utility of birds in eating insects and that it would be imprudent to destroy "the whole race of insects." Barton refers to his *Fragments*, and especially the usefulness of the House wren.[2437] His long note covers more than a half page.

p. 289. "Pliny I love, and I esteem," wrote Saint-Pierre, to which Barton responded: "I am much pleased with St. Pierre's eulogium of Pliny. I think him by far the most valuable of all the Latin authors." He would have Pliny's *Naturalis Historia* introduced in schools, rather than Horace whom few students relish or remember.

p. 401. Saint-Pierre wrote that "The rattlesnake concealed in the grassy swamps of America, cannot stir without sounding his ominous alarm." Barton countered: "This is not correct. The rattle-snake can, and often does, move to considerable distance, without sounding his bells. It is more true, that he does not strike to inflict a wound without sounding his ominous alarm," but neither is this "entirely true."

From Volume 2:

p. 28. Barton suggest that in the United States *Centaurea cyanus* [Corn Flower] attracts both blue and yellow birds.

p. 33. Barton disagrees that Linnaeus's works are untranslatable. "I do not think there is one word in the works of the illustrious Swede which is not susceptible of being rendered, and rendered fully and emphatically into English."

2436 Barton surely observed what is now called *Desmodium gyrans* (L. f.) DC., which Roxburgh had sent to Hamilton at the "Woodlands." Erasmus Darwin poetized "that the single female flower of the moving plant attracts her ten bashful suitors with movement and other arts," in his *Loves of Plants*, Canto IV, 335-336. Desmond King-Hele, *Erasmus Darwin* (London & New York, 1963), 114, comments. Charles Darwin experimented with the effects of light on the moving leaflets: Francis Darwin, *Life and Letters of Charles Darwin* (New York, 1888), 1: 418. S. Leonard Bastin, *Wonders of Plant Life* (London, 1912), 109, describes the motion of the leaflets as little jerks suggesting the movement of the second hand of a watch.

2437 [House wren, *Troglodytes aedon* Vieillet, 1809. AOU.]

p. 101. On the effects of lightning on different trees Barton states that he had composed a memoir several years ago which he intends to publish [He had received a long letter on the subject from Heckewelder some time before.]

p. 147. Saint-Pierre describes a *Vallisneria* in the Rhone River. Barton comments "The Val[l]isneria[2438] also grows in the Delaware, in the James-river, and in many of the lakes of North America. Its real and well-ascertained history is, indeed very wonderful: but I fear the whole of what Saint-Pierre has said concerning it, is not to be depended upon. It is to be observed, that he does not seem to speak of the plant from his own observation. He has mentioned the spiral scape, or stem, of the (female) plant in a former page. See p. 79 of this volume" [an error].

p. 150. The Honey bee is not native to North America, corrects Barton, and several native bees do not have stings, but in South America some Honey bees do have stings. He does not agree to the "attachment of defenceless species of bees to prickly trees." He refers to his "An Inquiry into the Apis mellifera" (1793).

p. 163. Saint-Pierre refers to "umbrella-size" leaves giving shade. Barton refers to his *Elements* (1803), and states that plants in cold climates do not produce large leaves.

p. 171. Of odors Saint-Pierre wrote that some spice-bearing plants with very small flowers have perfumed leaves, though cinnamon, "if it were the real cinnamon" is malodorous. The magnolia flower is fragrant and grows on the lower part of the plant. Barton addresses Saint-Pierre directly, for the only time. "You are, indeed, mistaken. And it would be an easy task to write a dissertation to expose the debility of your system in this part of the work." Magnolia flowers often grow high on the tree. *Magnolia tripetala* (Figure 59) Barton finds "vile and oppressive." *Franklinia* has an odor "much more delicate than that of the finest Magnolia."

p. 213. Saint-Pierre faults modern authors, some missionaries, "for having asserted that certain nations were destitute of all sense of Deity." Barton agrees. "A nation without some sense of Deity, I do not believe exists." If gypsies do not acknowledge a superior being, "it is one of the most remarkable facts in the history of the human species."

p. 384. Saint-Pierre would erect a statue to Nicot "for there is not a vegetable in the World which has poured such sums into [government] treasuries, or so many agreeable allusions into the minds of their subjects. The Nepenthes of Homer is not once to be compared to it." Barton is surprised to find so much enthusiasm. He will not pretend to say "whether upon the whole tobacco has done more harm than good." Opium is medically more useful he has found. Saint-Pierre referred to the "Solanum of America," and Barton specified that it is not, as supposed by Joseph Banks and others, a native of Virginia. He cites Clavigero that it was introduced.

p. 427. On education in "national schools," Saint-Pierre would have young people read "pictures of corruption" taken from Tacitus and Suctonius. Barton would not like to see Suctonius read, a "shocking picture of the most hideous vices of the Romans." Dr. Nisbet, president of the Dickinson College of Carlisle, Pennsylvania, agreed with Barton. But Barton agrees with Saint-Pierre that the maxims of Aurelius should be taught in American schools; but why not also Aurelius's meditations?

Barton made no comments on volume three.

[2438] [A significant misspelling, *Vallisneria* is an eelgrass, while *Valisneria* is a duck. AOU. IPNI. ITIS.]

Ladies' Botany

Muhlenberg wrote to Stephen Elliott, 29 July 1811, "Have you seen the pompous advertisement in the papers concerning Dr. Barton's Ladies botany? Such puffs according to Hopkins[2439] Strap manner hurt the science and are really ridiculous. However we will see what the *D montes* will bring forth."[2440] Although, as with other Barton schemes for producing needed income, the "Ladies Botany" was never published, it relates to a fashion whose beginnings were influenced by the popularity of Jean-Jacques Rousseau's *Essais Élémentaries sur la Botanique* (Geneva, 1781). Four years later it appeared in England with what Professor Emmanuel Rudolph calls "the fateful title," *Letters on the Elements of Botany* (London, 1785), translated, it will be noted, by the prestigious British botanist, Thomas Martyn. Rousseau wrote as though to a mother about ways to instruct her daughter in how to name plants by means of counting stamens and pistils, using the widely current scheme, the Sexual System of Linnaeus.

Erasmus Darwin, physician and poet, grandfather of Charles, composed *The Botanic Garden* (London, 1791), a didactic poem in heroic couplets discoursing on flowers in the Linnaean tradition. The work had impressed Barton for he quoted it on occasion. Barton had also been impressed with Saint-Pierre's *Études de la Nature*. Barton then was following, with hoped-for profit, a live current interest—the popularization of botany for young ladies.

The advertisement to which Muhlenberg had referred exists as a manuscript among Barton's papers:

> *Concerning Ladies' Botany*
>
> *Dr. Barton's smaller work entitled Principles of Botany intended chiefly for the use of ladies, and such gentlemen as may not wish to acquire a very critical knowledge of the science, will be published early in the spring. This work to be divested as much as possible of every thing technical, and will be especially adapted to the native vegetation of the United-States. It is intended to form a neat duodecimo volume of about 300 pages, and will be illustrated by a few necessary plates, carefully engraved.*

Two proof engravings for "Ladies' Botany" are testimony of its beginnings: "Order I Monogynia."[2441]

Was it the appearance of Priscilla Wakefield's *An Introduction to Botany in a Series of Familiar Letters* (London, 1796), which appeared in a Boston edition in 1811, that led to the demise of Barton's "Ladies' Botany"? Mrs. Wakefield had written that:

> *Botany is a branch of Natural History that possesses many advantages; it contributes to health of body and cheerfulness of disposition, by presenting an inducement to take air and exercise; it is adapted to the simplest capacity, and the objects of investigations offer themselves without expense or difficulty, which renders them attainable to every rank of life; but with all these allurements being principally written in Latin; a difficulty that deterred many, particularly the female sex, from attempting to obtain*

2439 Lemuel Hopkins (1750–1801), "bludgeon satirist," was born in Naugatuck, Connecticut; studied medicine under Dr. Jared Potter and Dr. Seth Bird. He moved to Hartford in 1784 where he joined the "Hartford Hits," or "Wits," of which Joel Barlow was a member. He was made an honorary member of the Massachusetts Medical Society and was granted an honorary M.A. by Yale College. Kelly, *Cyclopedia* 2: 5–6; Samuel Griswold Goodrich, *Recollections of a Lifetime, or Men and Things I have seen* (New York & Auburn, N.Y., 1856), 2: fn. p. 114; Harris E. Starr in *DAB*.

2440 HUH.

2441 Barton papers, APS.

> *the knowledge of a science, thus defended, as it were from their approach.*[2442]

Luigi Castiglioni visiting Harvard College in 1785 was impressed that on the first day of classes and on graduation day "ladies (who in America do not disdain attending scientific disputations) likewise assemble and perhaps by their presence increase in the students the desire to win the approval of the gathering."[2443] Nor were Philadelphia ladies different. Barton, however, returned to his more important endeavors.

2442 *Introduction to Botany in a Series of Familiar Letters...the first American from the fifth London Edition* (Boston, 1811), iv. A third American edition (Philadelphia, 1818) has a frontispiece of special interest, William Bartram's drawing in color of "Pyrola umbellata, Pipsissewa," *Chimaphila umbellata* (L.) W. P. C. Barton. It had been prepared for the second edition of Barton's *Elements* (1812), Plate 39.

2443 Pace, *Castiglioni*, 23.

Chapter XXI

Concerning Geology, New Madrid, and Mineralogy

"The connection between Geology and Zoology, which for want of a better general name, I might denominate Elminthology."
–Barton in *Discourse*, 37

After reading Volney's *Tableau,*[2444] Barton composed a "memorandum concerning Earthquakes" in which he found that Volney had confirmed what he had told him—the Indians west of the Alleghenies had no word for earthquake or volcano, but tribes east of these mountains did have words for them.[2445] *Medical Repository* had carried the notice "The Lancaster German paper mentions, that on Tuesday, the 11th of January, 1798, between the hours of two and three in the morning, there was felt, in that town and its neighborhood, a severe Earthquake, which continued for several minutes. The shock was accompanied, it is said, with a blaze not unlike the burning of a chimney. To this imperfect account, we have been unable to obtain any additional information." News from Lancaster had certainly stimulated Barton's interest. Volney had found no traces of earthquakes in the western country. Barton had queried Heckewelder 3 December 1795, "Do the Delawares have a word for Earthquakes?" Did Heckewelder perceive any earthquake when he lived at Muskingum or elsewhere in the west? What had been the *course* of *direction*? Heckewelder replied on the 23rd that at Coshachking, a Delaware Indian seat on the southeast side of the Muskingum River, opposite the "Great Forks of Muskingum," there had been a quake. He was living two miles down river at the time, and his house had been shaken. He had noticed no change in the strata, although nearby there were "high steep hills, covered with stone...these lie in every most irregular direction."[2446] In a manuscript of John Bartram, Barton found an account written 18 July 1750 that there had been four quakes in thirty years and that they had extended in a line running northeast to southwest. Because of the very dry season Bartram had expected another quake soon, but Barton found no record for the years 1744–1755. There had been reported an earthquake at Niagara Falls on 26 December 1796, and Barton completed his memoir by declaring he would welcome a "particular account."

Barton disclaimed the honor of having told Volney the cause of different arrangement of strata—the hypothesis had been given Barton during Volney visits. On a scrap of paper Barton quoted from a manuscript of a Dr. E. Smith on a burning spring, then on the verso:

"Mr. Volney informs me the Indians told him of a mountain which has been seen to emit fire and smoke. Perhaps without further information, the Indian story is not entitled to much attention. But still I am of opinion that this country has formerly suffered a great deal from

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2444 Constantin François Chasseboef Volney (1758–1820), b. Craon, Anjou, France, was in America 1795–1798, and visited Barton. His *Tableau du Climat et du Sol des États-Unis d'Amérique* (Paris, 1803; American edition, as *A View of the Soil and Climate of the United States of America* (Philadelphia, 1804), edited by Charles Brockden Brown (1771–1810)). For Brown see *DAB*. Although brief, a satisfying outcrop is White, "Volney," with its bibliography; Merrill, *Geology*, 30; Barton in *PMPJ* 1 (1804) Pt. I: 60–65; John C. Greene in *DSB*. For memories of Volney see Breck, *Recollections*, 198. Volney's papers relating to America are in the possession of Comte de Baudinière, in Rennes, France. In October 1963 they were examined and photographed in part by Charles M. Harris in relation to Wm. Thornton.

2445 *PMPJ* 1 (1804) Pt. I: 60–65.

2446 *Med. Repos.* 1 (1798): 372.

volcanoes and from earthquakes." In his "Journal 1802" Barton wrote "In November 1794, Mr. John Beckley, Clerk of the House of Representatives informed me, that an old man had told him, that about 45 years ago, a hill or volcano, distant about 35 miles from Winchester...had emitted fire and ashes...there was a good deal of explosion." Rittenhouse confirmed for him that there had been a volcano northeast of Winchester. Greenway had given an account in the first volume of the *Transactions of the American Philosophical Society* (1793) of a volcano or "Bursted Hill" on Dan River near the North Carolina and Virginia border.[2447]

Volney told that at Detroit, northern Indians related a story of a mountain "somewhere far inland, which sometimes throws out smoke," but Barton wanted a surer foundation. He did believe that Lake Ontario had been formed from an extinguished volcano because of its great depth, 500 feet in places near the shore.

The New Madrid earthquake of two a.m. 16 December 1811[2448] was felt by John Bradbury, who left a most valuable eye witness account, but which was not published until 1817 in his *Travels.*[2449] Winthrop Sargent, who had been Governor of Mississippi Territory, offered his observations to Barton, who replied 9 March 1812, "your observations...will be very acceptable to me & to the P. Society: and I beg you to let us have them, always distinguishing what is quite certain, from that which is more an hearsay. Your observations will be published with care." Sargent's observations were also published in *Memoirs of the American Academy of Arts and Science* 3 (1815) Pt. 2.

On 20 March 1812, Barton present, a paper from Dr. Alexander Montgomery, dated 25 February, Frankford, Kentucky, was read at a meeting of the American Philosophical Society "describing the Earthquake that had occured there."[2450] There can be little doubt that as a result Barton queried a Mr. M. Harney[2451] of Bardstown, Kentucky,[2452] soon after. Harney replied 28 May 1812:

> *Sir,*
>
> *It is with great diffidence that I comply with your request in sending you what little information I have collected relative to the Earthquake. It would be unnecessary trouble to give you a minute detail of the seat, violence, frequency, continuance, and effect of all the concussions which have spread consternation and wonder throughout the Western country. I am not able to tell you how many chimneys have been thrown down; how many walls have been split; how many boats have been sunk by the tumult and agitation of the Mississippi; nor how many women have suffered, syncope, hysteria or miscarriage—I must refer you to the newspapers of the country for this information—I shall however give you some facts which may aid your philosophical researches into the nature and cause of Earthquakes—*

2447 Merrill, *Geology*, 6-7, discusses early views on northeastern United States earthquakes and volcanoes.

2448 For an account see M. L. Fuller, *U.S. Geol. Surv. Bull.* 494 (1912): 1-119. There were three principal earthquakes, 16 Dec. 1811; 23 Jan., and 7 Feb. 1812. The town of New Madrid was destroyed, the course of the Mississippi altered, and parts cut off. Chimneys were downed in Cincinnati, and the shocks were felt in Boston. The Richter magnitudes were calculated to be 7.5, 7.3, 7.8.

2449 *Travels in the Interior of America in the Years 1809, 1810, and 1811...Forward by Donald Jackson* (Lincoln, Nebr., & London, 1986), 204-210.

2450 APS, "Minutes," 434.

2451 John M. Harney (1789-1825), physician and poet, born in Sussex Co., Delaware, emigrated with his family to Tennessee, but after studying medicine settled in Bardstown, Kentucky, where he resided until 1818, then moved to Louisiana (Drake, *Dictionary*).

2452 Bruce A. Bolt, *Earthquakes, a Primer* (San Francisco, 1978), 101. According to the map, the isothermal lines of intensity at Bardstown would have been 7 on the Modified Mercalli Scale.

On Sunday night previous to the first shake, I was travelling from Frankfort to Bardstown in company with Mr Rowan esqr.[2453] *It was about two hours in the night; very foggy and cloudy–It was dark as original night ere God said 'let there be light'–when on a sudden a meteorus exhalation or electricity or something illuminated our road, insomuch that we could see each other at the distance of ten steps, and even the ground & the roots of the trees were visible–It resembled a dim moon-shine as (if I may use an excentric comparison) it appeared as if a hogshead of mo|o|nshine had been emptied upon us & diffused itself equably throughout the surrounding gloom–It was not a meteor or shooting star; for it continued four or five minutes. It was not the moon for the horizon was overspread with clouds & stood over us 'like a black ceiling'–It was not fire; we were careful to examine in every direction, in order to ascertain from whence the light emanated; but we saw no place from which it could issue–We at onetime thought that snow had fallen & brightened the air; we dismounted & found it was not the case–In short, sir we were not deceived. I believed then, & do now, that it was the effect of electricity–After riding two or three hundred yards the light disappeared, and it became so exceedingly dark that an owl or a bat could not have seen a foot–at two o'clock on the same night I was awaked by the rocking of the house; the barking of dogs; the squealing of chickens; the lowing and bellowing of cattle; & the lumbering & creaking of the houses–*

I also heard a roaring, like that produced by an approaching tempest–or like the fall of a great cataract, The light which I saw, and the roaring which I heard made me conclude that the Cumberland mountain had suffered a volcanic explosion–but since I have discovered that no such eruption has been found to exist in any direction I have attributed the amazing phenomenon to the agency of electricity–I was the more confirmed in this opinion by the electrical smell which was observed by many persons in this country. There are many arguments in favour of this opinion: but it is not my business to theorize at present but merely to state facts–The A|u|rora Borealis, & what are vulgarly denominated sky-lights were very frequently seen by myself and almost every one else–about an hour after dark the clouds in some quarter of this horizon would appear frequently to be in a blaze for one or two hours–You have no doubt heard of lakes being formed, of the channel of the Mississippi have sunk & destroyed the navigation of that river? Of immense chasms being produced: Of sand & coal being thrown up with columns of water to an immense distance in the air? I have read these things but cannot judge of this truth as well as yourself–

...I wish you would attend to the fact which I mentioned viz. that the Beech tree |Fagus grandifolia| is never struck by lightning–Beech wood however must be a conductor of Electy. in consequence of the moisture it contains–it may perhaps be accounted for in this way; the innumerable branches of the beech divide the electric fluid so much that it produces no wounds, as it would if concentrated upon a particular spot–but is this idea contradicted by the circumstances which I before mentioned?–viz. a small beech having twined itself round a perismon tree, escaped, while the latter was rent to pieces–I have mistated this fact, I think. It was the persim|m|on

[2453] John Rowen (1773–1843), jurist, prominent in Kentucky, a United States senator. Drake, *Dictionary*; Merton Coulter in *DAB*.

[Diospyros] *which wound itself round the Beech. The lightning followed the spiral course & the beech was untouched. But I shall content myself with stating the fact, that the green Beech has never been known to suffer from lightning. The Indians upon the approach of a thunder storm, fly to a Beech—they say 'the great spirit loves the Beech Tree* [*Fagus grandifolia*] *& will not smite it with thunder Bolt'—I wonder the ancients did not also prize the Beech to be the favorite of Jove instead of the Oak, which is more than any other tree obnoxious to the Thunderer's rage.*

Harney then recounted a strange find, scarcely geological:

I will now give you an account of what I deem a curiosity—A well was dug in Bardstown at the bottom of which (it was twenty or thirty feet deep) a round stone was found somewhat larger than a Billiard ball. [t]*resembled the common gravel stone which you see on the shores of Delaware or Skuykill—The Boys used it for some time for a 'long Bullet'—While they were playing with it one day, it broke—In the center was the Ball of a 'Tumble-Turd'! The excrement appeared of the natural color & fresh—it was the excrement of a brute the green grass was perfectly visible—It is evident, that the stone which surrounded this ball, must have been produced by gradual petrefaction of dirt &c. Is it probable that the excrement produced a tendency to petrefaction? When this well was dug there had been a sink hole; which shows how the ball might have got to that depth...*

After a few notes on insects, Harney concluded:

I am sorry that it is not in my power at present [to] *make this letter more valuable than it is—I have at present great demands for cash & am not able (such is the scarcity of money) to collect any quantity beyond what is immediately necessary for my use. I am anxious to see your work on Zoology; I wish you to inform me when you expect to publish—I should be glad to know what other works you intend to favour the world with. I do not feel the doubt sir but that not only the present but future generations will derive incalculable benefit from your intellectual labors. That you may be successful in all your literary efforts is the wish of yr friend & servt.*

M Harney

[envelope rubberstamped:] "mail," "25," "Bardstown June 3 Kentucky."[2454]

The Reverend Thomas Barton had collected minerals for Thomas Penn and had sent most of the specimens to Europe. William Barton also had a small collection in Lancaster, probably begun on trips with his father, and Barton as a lad may have observed with interest. There had also been Barton's trip westward into Ohio with David Rittenhouse. His trip with Maclure to Niagara Falls in 1798 stimulated this interest, and added one more pursuit to his agenda. The trip itself may have been further stimulated by Barton's unidentified correspondent from Philipsburg, on Big Mushanon River, 15 February 1797:

Sir, in compliance with your request I now offer you some little remarks, and observations made during several journies in the western part of the State—

[2454] Barton papers, APS.

In journeying among the different ranges of the Alleghany and Blue Mountains I could not but remark with respect to the position of the rocks and stones, that in general they do not lie horizontal, but seem thrown up on one side in such a manner as to incline towards the NorthEast forming to the South Westward an angle averaging in general about sixty degrees– In the low lands at the bottoms of the mountains the rocks appear to lie in an horizontal position, and do not seem to have been removed by, or suffered any kind of convulsive motion which those in the mountains would seem to have sustained–The Southerly parts of the mountains particularly the Allegany between Milesburgh & the distance of nine & ten miles from it, appear the most steep and inaccessible, and to the Northward and glide off in an easy descent–

After some observations on trees of the area, the Philipsburg writer continued:

About ten miles from Milesburgh on the top of the Allegheny is an excellent Spring I have visited in every season and never found it fail or likely to dry up. The spot where it is situated is one of the highest peaks of the Mountain, which seems to cause this circumstance the more remarkable.

I shall in my future preregrinations not cease to make such remarks and enquiries into natural objects as may present themselves–which I shall take the liberty to furnish you with–

One circumstance may perhaps be worthy of mention–In Musser's Lead mine on Juniata upon digging and blowing away some rocks, several branches and some substances resembling human legs and thighs petrified were picked up as was also a curious Indian pipe which Mrs. Musser has preserved–This mine is situated on the head waters of Juniata in Huntington County–[2455]

There the letter as preserved ended. The wide area, from the New Jersey to western Pennsylvania, yielded sparse information. Barton appended a note to Richard Peters Barton's article on the use of one mineral.

The editor will thankfully receive any additions[,] facts and observations, from any of his correspondents, concerning the use of Gypsum, as a manure, in the United States. Even conjectures concerning the mode of its operation, will be acceptable.[2456]

Barton had reviewed the state of mineralogy in his *Letter to M. Lacépède*, read before the Society 5 November 1802:

Mines of various kinds are very abundant in the United States. We are extremely rich in iron, copper, and lead. The iron mines of Pennsylvania are, perhaps, inexhaustible. Prodigious quantities of copper, nearly in a native state, have been discovered near Lake Superior. A bed of cinnabar has been discovered in Virginia; and several veins of plumbago have been detected in Pennsylvania and other parts of the Union. As to gold and silver, these, as yet, are principally to be found in the fields that are

2455 Barton papers, APS.

2456 *PMPJ* 1 (1804) Pt. I: 87.

cultivated by the virtuous hand of agriculture. Our country is extremely rich in coal. This useful article has hitherto been found in the greatest abundance in the western parts of the United States, beyond the Alleghany mountains. It is in the same part of the continent that the principal salt springs, and mines of sal-gem or rock-salt, are found. In a few years we shall, in all probability, be able to do without the salt of Europe...

Very generally the veins of limestone run parallel with the mountains, that is, north-east and south-west...These strata are sometimes perpendicular, but never horizontal, but they are west of the Alleghany. This difference in the disposition of the strata east and west of the Alleghany is well entitled to the attentions of naturalists.[2457]

His interest was practical: He told Heckewelder of John Bartram's use of "mould from the floor of a chemical lab" to prevent the ravages of the striped beetle on cucumber vines since it was sulphurous, and so suggested that Heckewelder use sulphur.[2458] He wrote to Dr. Pearson that he had found mild solutions of sulphates of iron and copper beneficial to plants, but harmful if too strong. Pearson had thought sulphate of iron poisonous, but "a most powerful manure."

Although we associate Barton with botanical and zoological topics, mineralogy and chemistry were lifelong and practical, even though somewhat lesser, enthusiasms for him. He had sat in on discussions of Priestley's hypothesis on phlogiston at his Uncle David Rittenhouse's home after publication of Priestley's tract in 1797. As a curator he was on the committee for ordering up the cabinet of minerals at the American Philosophical Society. He talked with Volney; Maclure joined him on a field trip to western Pennsylvania to study the country and for rock samples. He aimed to publish on minerals and geology of the United States, to produce the first history of the subject in the new republic. His thwarted hopes still built a modest cairn of mineralogical influence.

What in geology was "most worthy" of being attended to, Barton found it difficult to decide.

The petrifactions and impressions which are found upon many of our mountains form a most interesting subject of inquiry. I possess a large collection of such impressions, &c., and I consider them as some of the most interesting medals of the revolutions which our country has undergone. It is in fact, only by a very critical attention to these medals, that we shall ever be able to form a correct theory of the earth...As early as the year 1785, I paid particular attention to this subject, in the western parts of Pennsylvania, Virginia, and in the country north of the Ohio, &c.

Always interested in Indian-lore, Barton noted:

...their fathers told them, that Lake Erie and all the other great lakes were once more extensive than they are at present...that the country about Newburgh, on the North or Hudson-river, was once a Lake; and that, in the process of time, the waters of this lake broke their way through the mountains [with great havoc to both humans and other animals]. *We cannot, I say, place too high a value upon the Indian traditions of this kind. To a discerning and virtuous naturalist, they are like mines, among the rubbish of which we dig, with success, for the most precious metals. Do not suffer yourselves to be deterred from noting down Indian traditions...by the*

2457 *Philos. Mag.* 22 (1805): 210–211.
2458 Gilbert Collection, CPSP.

> *sneers of little intemperate philosophers, who without candour to receive, or ability to discuss, traditional tales, would throw a veil of doubt upon these very points,—the origins of mankind, their dispersion over the globe, the physical revolutions of the globe itself, which are the most interesting to which philosophers can attach themselves.*[2459]

So he spoke in his *Discourse* to encourage future physicians to observe and record in their future locations. "Of all the branches of natural history, there is not one which has been cultivated with so little attention, zeal, or success, in the United-States, as Geology, Mineralogy. This, however, is a science of great curiosity and importance, and is, in an especial manner, entitled to the notice of Americans." Barton also introduced comment on minerals from time to time in his materia medica lectures, linking his comments with the growth of chemistry.

According to Europeans there were three ways of classifying minerals: the Germans by surface features; crystallography by the French; or chemical analysis by the Swedes. To the seven elements known to the ancients, twenty-three others had been identified by the end of the eighteenth century, and twenty-one more in the next seven years. In Europe electrochemistry and atomic theory were now being employed in the study of minerals, patronage coming from monarchy and the aristocracy. By contrast, support in America came only from interested individuals, always with the hope that financial encouragement would come from the government. In Barton's time there was a dearth of reference books, of collections of specimens for comparison, and of qualified teachers. This meant slow progress. Students, especially the medical students, who went abroad for study, brought back new ideas, valued specimens, and in some, an enthusiasm for investigation.

Samuel Latham Mitchill had introduced the study of minerals into the undergraduate curriculum at Columbia College in 1792, and in 1797 in his newly established *Medical Repository* noted recent advances in mineralogy and its theoretical applications. These were interspersed with medical and natural history observations, as they were in Barton's *Medical and Physical Journal*, beginning in 1804, and even occasionally in Coxe's *Medical Museum*, beginning in 1805.

Over the years the mineral collections at the American Philosophical Society were accumulating. In 1802 the considerable collection of Thomas Peters Smith was bequeathed to the Society.[2460] Barton remembered Smith's legacy in his letter to Lacépède:

> *Mineralogy and chemistry, and I may add the other branches of natural history, have lately sustained a loss, not perhaps easily repaired, in the death of Mr. Thomas P. Smith, a young man of the most capacious mind, and of the warmest enthusiasm for the attainment and promotion of science.*[2461]

Thomas Peters Smith appears in the American Philosophical Society's "Minutes" 15 June 1798, as describing a vessel for boiling inflammable liquids, and on 18 January 1799 as giving a paper on basalt. On 19 July he was elected a member, and in December his approval was sought for the acceptance of several of Priestley's papers for publication in the *Transactions*. On 3 January 1800 he was elected a secretary of the Society. Self-educated in chemistry and interested in it for manufacturing, he toured Europe, visiting Britain, France, Switzerland, and Scandinavia, keeping notebooks with these interests in mind. On returning home, he was mortally wounded by the accidental explosion of one of the canons, but was able to make out his will, bequeathing his collections and notebooks to the American Philosophical Society.

2459 Barton, *Discourse*, 53–61.

2460 APS "Minutes," passim; Greene and Burke, "Minerals," 31–32, and passim.

2461 *Philos. Mag.* 22 (1805): 209.

The Society's "Minutes" mention "Smith's bequest" 3 Dec. 1802 and again on 19 August 1803. Maclure shipped specimens from London and from France, and "Two cases and one cask" arrived from Baltimore. The discovery of his "Complete journals" was reported 20 January 1804. The last entry in the "Minutes" reads "Committee to arrange T. P. Smith's minerals discharged, and Dr. Seybert appt'd." Smith's will was dated 2 September 1802; his notebooks of his excursions in Europe 1800–1802 are in Archives at the Society.

Dr. Adam Seybert—Barton called him "an ingenious cultivator" of mineralogy—and Dr. James Woodhouse had been asked about 1797 to prepare a list of all the Society's mineralogical specimens. To expedite the task, which was complicated by the new addition to the building, the committee was enlarged to five members that would include the two curators at the time, Barton and Peale. Differences of opinion on the best method of classification, and personal antipathies, slowed the task, and most of it waited the coming of Godon. Seybert, however, took over the task of ordering up Smith's specimens. Seybert as best qualified in the field was assigned the minerals collected during the Lewis and Clark Expedition. The Donation Book at the American Philosophical Society lists these specimens in John Vaughan's hand with comments added in Seybert's hand. The thirty-four specimens with their localities are preserved at the Academy of Natural Sciences in Philadelphia, and labeled as contributed by "Captn. Lewis."[2462]

William Barton sent a request to Barton in 1805 when Augustus John Foster, serving under Anthony Merry,[2463] British minister to the United States from 1803 to 1806, wanted "some lapides" to be sent to England on his behalf. Jefferson requested Barton's opinion as when in 1803 he inquired about a bed of sulphur in "Ganasee," New York.[2464] This may have led to Barton's "Notice of the Sulphur Springs in the County of Ontario and State of New York," published in his *Journal*.[2465] Darlington discussed the effects of potash in a letter of 12 November 1804.[2466]

Often in letters which passed between Richard Peters Barton and Barton there are references to minerals and coal, for which Barton expected an economic future. On Richard's trip of 1808 to the Cumberland area and western Tennessee he recorded observations on the geology of the country. Barton's "Query 11. Impressions of shells, plants, in slate, stone, coal, &c. a very interesting subject to me. Ask about such things," brought an answer about the limestone with shell impressions:

> *Some large flat rocks in* [Nashville] *are so full that it would be difficult to lay a dollar down without touching some of these Shells. Some of them are as large as a boy*['*s hand. I saw no slate, and in one place only free stone.*[2467] *Limestone abounds everywhere. The whole country is founded on a horizontal strata of this stone. The upper stratum is within six or eight feet to within one foot of the surface. This stratum forms the bottom of the creeks and smaller rivers, but the larger rivers, as the Cumberland & Tennessee have their bottoms formed of round pebbles, which have most probably, been washed down from the mountainous country...*

Turning to southwestern Virginia, Richard described King's salt works where the well-water is:

2462 Jackson, *Lewis and Clark*, 221, 240, 275. Due to twentieth-century reordering of the Academy's mineral collections, only nine of these specimens could be positively identified at the time of publication.

2463 Richard B. Davis, introduction in Augustus J. Foster (1780–1848), *Jeffersonian America, Notes...1805, 7, 7, and 11, 12* (San Marino, Calif., 1954). Lester, *Merry*, passim. Also mentioned in Robert C. Alberts, *The Golden Voyage: The Life and Times of William Bingham 1752–1804* (Boston, 1969).

2464 HSP.

2465 *PMPJ* 1 (1805) Pt. 2: 166–168.

2466 Barton papers, APS, the letter partly mutilated.

2467 Free stone: finer grained, easily sawn sandstone.

...nearly (but not quite) saturated with salt. Four bushels of it will make one bushel of clean salt. The well is above 200 feet deep, and great part of this depth was dug through plaster of paris. This first appeared within twelve feet of the surface, and continued to the bottom of the strata, with intervening veins of blue and red gravel and small slate...About ten miles from this spot, in the same valley, and where it reaches the fork of the Holston, is a very considerable hill of plaster of paris. Many persons are now grinding it and using it as a manure.

Fossil coal of a very fine quality has been discovered in two places on the East bank of the N. fork of Holston, five miles below, and the same distance above the salt works.—About 1000 bus. of salt is made daily at the works.

Plaster is found in Bottetourt County in two places, viz. on the road, and midway between Pattonsburg and Amsterdam, and also on Catawba Cr. six miles N. of Fincastle...It is very inferior to the Holston plaster. I was informed that plaster had been found in Green Briar Co. on Green Briar river.[2468]

William Bartram, having read Barton's "Supplement" to Dr. Gregg's "Medical Sketch of Bristol," wrote him, undated, but 1805:

My Worthy Frd.

On perusing Your first No. of Medical and Physical Journal, I particularly noticed in Doctr. Gregg's account of the borough of Bristol that he conjectured the land to be Made ground.

I suppose, it was a peninsala, of Jersey & that the low ground back of, & N.W. of the borough which he describes as being at present, low marsh Meadows, & ponds, was formerly the Bed or channell of the River Delaware; And at that time the present Bed of the River was a low Isthmous which connected it with the Firm land of the Jerseys. And I will now give you my reasons which confirms me in the supposition. 1st. The Doctr. observed at the depth of about 20 feet, logs & Limbs of Trees which he thot were Pine. 2d. When I was at Bristol, 30 or 40 years since, I observed the soil to be exactly the same with the Jersey shore opposite, & produced the same vegetables, particularly I observed growing in woodlands close to the Town Lupinus perennis. 3dly. That the Tides regularly ebbs & flows over great part of the morass, which insulates the burrough. And that up the pond even to the Delaware the ground is gravelly just as the bed of the River is now. The channells of Rivers are continually changing place, is some part or other. Owing to obstructing in their course, Inundations &c.

When this disruption happened, whether prior to the arrival of the White people, or since, is a matter worthy of investigation—[2469]

William Maclure[2470] returned for his second visit to the United States from London in 1796. On 19 August 1798 Barton wrote William Bartram, inviting him to join in what promised to be a pleasant field excursion into the Pennsylvania autumnal woods:

2468 Barton papers, APS.

2469 Barton papers, APS.

2470 Geo. W. White in *DSB*; Geo. P. Merrill in *DAB*.

> *My friend Mr. Mclure is extremely anxious to enjoy the pleasure & advantage of your company, on a botanical excursion to the western parts of our state, &c. I am so desirous that you should accompany Mr. M. that I intended, but have been prevented, to have called upon you to use my little influence to prevail upon you, in this business. While I can assure you, that you will find the society of Mr. M. extremely agreeable to you, I cannot but think that the contemplated expedition may be of use to your health, and of advantage to you, in the pursuit of your favorite science. I confess that in thus persuading you, I am not a little interested: for I know that the observations which you may make in such a journey may be of great use to the public & of course to me.*[2471]

His obligations at the farm and Garden, even more than his health, kept Bartram from joining the trip. Barton and Maclure set out from Philadelphia without this good companion. Along with them probably went James Woodhouse's *Young Chemist's Pocket Companion* (Philadelphia, 1797) and its "portable laboratory," the result of his lectures and experiments with iron, titanium, zinc, anthracite coal, etc.[2472] Lancaster was a stopover with one or another of the Barton brothers, with perhaps a glimpse at William's mineral cabinet. They arrived at Harrisburg on 12 October, and the following day visited Cornwall Furnace. Of particular interest may have been the cobalt: it did not come into production there as a by-product of iron-mining operations until the 1940s, and continued operation until 1971.[2473] Whatever notes Barton made of the rest of the trip were scattered among his papers.

Maclure was appointed a commissioner to settle claims of American citizens on the French government for spoliations committed in France during the Revolution. He went to Paris in 1803 and there met Joseph Carrington Cabell (1778–1856), a friend of Jefferson who became his right hand later in founding the University of Virginia.[2474] Maclure suggested that Cabell report to Barton on the scientific news of Cuvier, Volney, and others, on zoological as well as on the physical sciences. Barton wrote to Cabell 22 October 1806:

> *May I beg you to think of me when you have it in your power to procure more than two specimens of any of your rarer minerals or other objects elustrative of the natural history of the state of Virginia. In return for your attentions, you may at all times command my services.*[2475]

During the years that Maclure lived abroad he travelled, at times with Washington Irving, attending classes in the universities and meeting savants. He wrote Barton from Paris 18 March 1806:

> *Dear Sir*
>
> *I have heard frequently of you since I left Phila. tho I have not the pleasure of a letter direct from you—a few months ago at Geneva Mr. Picte mentioned having a small box of minerals of Mont Blanc for you which he did not Know how to forward[.] I offered to forward them by the first safe conveyance and shall with pleasure perform as soon as Mr Picte sends the box to Paris—the present will introduce to your attention and civilities Professor Neef who goes to your place to teach children by a method addopted in Switzerland by Pestalozzi the successful practice of which I*

2471 Etting collection, Scientists, HSP.
2472 Greene and Burke, "Minerals," mentions Woodhouse's *Companion*, p. 23.
2473 On cobalt, see *DAH* 3: 13.
2474 Armistead C. Gordon Jr. in *DAB*.
2475 T. P. Barton collection, BPL.

had an opportunity of verifying last summer in Switzerland the progress of the children from 5 to 10 years of age in the acquirement of positive and useful knowledge was astonishing and left no doubt of the great superiority of that method over all the others that has been practiced–the substituting the knowledge of things in place of words as the foundation of instruction produces an early habit of correct observation the only base of real information the advantages arising from such early habits no one can appreciate better than you as few have practiced them with such successful utility as yourself [.] *I therefore recommend the system to your support and protection not doubting but you will use your best endeavours that it may have as fair and impartial a tryal as the liberality of the age and the state of Society will admit as it is allmost the only thing I have met with in Europe worthy of immitation. I feel interested in its success on your side and shall do all I can to forward its progress and success with profer of services on all occasions. Yours with esteem*

Wm Maclure
favd by
Mr Neef
Received May 30th 1806[2476]

"Mr. Picte" of Maclure's letter was either Marc-Auguste Pictet (1752–1825), Geneva physician and meteorologist who "toured" Mount Blanc in 1778 with geologist and physician Horace de Saussure and J. Trembley[2477]; or Charles Pictet de Richemont, agriculturist and diplomat (1755–1824). The "Professor Neef" was a teacher at the Pestalozzian school that Maclure visited in Switzerland. In fact Maclure asked Pestalozzi to suggest a disciple to carry out his principles of education in the United States, and he recommended Joseph Neef (1770–1854).[2478] Supported by Maclure, Neef studied English, married, and in 1808 or 1809 sailed for Philadelphia. The school, funded by Maclure, was situated about five miles from the city, near the falls of the Schuylkill; Mrs. Neef also was a teacher. Neef attended meetings of the newly established Academy of Natural Sciences. From lack of sufficient interest, the school moved in 1813 to Delaware County, but public disapproval of Neef's bold advocacy of atheism closed the school. In 1814 the family moved to a small farm near Lexington, Kentucky, but Maclure and Owen took them in 1826 to New Harmony, Indiana, that oasis of tolerance and liberal thought.

In Barton Maclure had thought he had a supporter for initiating the establishment of such a school since he had concluded "the advantages arising from such early habits no one can appreciate better than you as few have practiced them with such successful utility." Did Barton add another endeavor to his busy schedule? Did Thomas Pennant Barton attend the school? At least Barton must occasionally have met Neef on visits to Bartrams' garden nearby.

2476 BPL.

2477 De Beere, "Scientist." Briquet, "Botanistes," 372–373.

2478 Robert F. Seybolt in *DAB*. Neef declared his philosophy of teaching in his *Sketch of a Plan and Method of Education, founded on an Analysis of the Human Faculties, and Natural Reason, suitable for the Offspring of a free People, and for all rational Beings* (Philadelphia, 1808). For fragments on Francis Joseph Nicholas Neef (1770–1854) see Josephine M. Elliott, "To Holland and to New Harmony. Robert Dale Owen's travel journal, 1825–26," *Indiana Hist. Soc. Publ.* 23 (1969): 175–296; Bestor, *Utopias*, 147; Lockwood, *Harmony*, 235; Wilson, *Angel*, 184. Marie Duclos Fretageot was attracted to the Pestalozzian school on the Schuylkill, remained a longtime correspondent of Maclure, and after New Harmony opened played a key role (Bestor, *New Harmony*). There not only Maclure, for minerals and geology, but Thomas Say and his wife Lucy for insects, François Michaux for botany, and Charles Alexander Lesueur for fishes, all brought to American science rare ingredients by its influence, international contacts with visitors, and printed works. Two of Neef's daughters married two of Robert Dale's sons, David and Richard Dale, who became notable geologists.

From James Cutbush (1788–1823),[2479] younger brother of Dr. Edward Cutbush, came an undated holograph of six folios "On the formation & advantages of oxygenated sulphate of mercury as a chemical reagent for the discovering the presence of muriatic acid, over the princpal tests heretofore adopted." It had probably been submitted to the *Philadelphia Medical and Physical Journal*. A chemist by trade, Cutbush lectured on chemistry and mineralogy at St. John's Church, Philadelphia.[2480] He contributed to *Aurora* (1808-), *Philadelphia Medical Museum*, and to the one volume of Bruce's *American Mineralogical Journal* (1810–1814). Cutbush was present at a meeting of the American Philosophical Society 15 April 1814, having been elected a member 21 January that year.[2481]

Silvanin Godon (1774?–1840), whom Maclure had met in Paris, and of whom François Michaux had said, "Mineralogy is for him what botany is for me," arrived in Boston 6 July 1807, where he gave a series of lectures. He made two visits to Philadelphia and delivered two papers, one, "Observations to serve the Mineralogical Map of the State of Maryland."[2482] In 1809 he moved to Philadelphia, and on 21 April 1809, Barton present, he was elected to the American Philosophical Society, serving on several committees, his last recorded meeting 16 August 1811. He also joined the American Linnaean Society. Barton's ticket of "Admittance to lectures on mineralogy" by Godon for the year 1809 survives among his papers, as well as a broadside prospectus of Godon's *Elementary Treatise on Mineralogy* (Philadelphia, 1810).[2483] Godon also spent time ordering up the mineral collections for the American Philosophical Society and led groups on field excursions, his following including Rubens Peale and Thomas Jefferson Randolph.

Rubens Peale relates in his autobiographical "Memorandums" how he and his associates discovered near Baltimore a chrome yellow brighter and more permanent than "king's yellow" then in use. Rubens purchased the land and took Godon, who had worked on chrome while still in Paris, as a partner. The product proved disappointing, and Godon was forced to sell his mineral collection to pay his debts.[2484] A committee of the newly founded Academy of Natural Sciences bid $370 at the auction in July 1812, but ever-acquisitive Barton overbid and acquired the treasure for $750.[2485] Enraged that the collection was not going to a public institution, and showing signs of mental distress, Godon, on meeting him on the street, threatened to shoot Barton, who had him locked up. From prison Godon unsuccessfully implored the American Philosophical Society to remember his services in arranging its collection of minerals. As a further inducement he also made offers of apparatus still in his possession. Friends finally obtained his release.[2486] After Barton's death Joseph Watson, of the firm of Watson and Hall, purchased the collection for $582. Then passing through the possession of Thomas Cooper, it was presented to the Academy.

Dr. Samuel Prescott Hildreth (1783–1863), observing and collecting naturalia since 1806, wrote Barton from his seat of practice:

> *Marietta, Ohio, 20 August 1810*
> *To Do. Barton*
> *Sir,*
> *Understanding you are writing a Journal calculated to bring to light the mineral productions of America, too long slighted and neglected, I have*

2479 Edgar F. Smith, *Old Chemistries* (New York, 1927), 47–50, with title page of Cutbush, *The Philosophy of Experimental Chemistry* (Philadelphia, 1813, 2 vols.) and in *DAB*.

2480 Greene and Burke, "Minerals," 32.

2481 APS, "Minutes," 443.

2482 *Trans. Amer. Philos. Soc.* 6 (1809): 319–323.

2483 No copy found for Ewan, "Barton's Library," nor in LCP.

2484 Sellers, *Peale* 2: 261–262; and Sellers, *Peale a Biography*, 357–358, and 474 fn. 12.

2485 Ruschenberg, *Academy*, 34; ed. 2, 50.

2486 Gibbs papers, Newport Historical Society.

taken the liberty of sending to you by the hand of Mr. Skinner a Merchant of this place, a trifling specimen of some of the mineral productions of Ohio, which exist in large quantities in this neighborhood—one appears to be very pure Bismuth, considering its native state. the other, common pyrites—As my chemical and mineralogical knowledge is quite limited, be so good Sir, as to favor me with a few lines respecting the substance I expect to be Bismuth...

The following account of inflamable air will perhaps be, not uninteresting—

On the waters of the Little Muskingum about six miles from this place, a gentleman informed me that he had in a hunting excursion last winter made a discovery of a very curious spring—he said it made a noise like a large pot of mush boiling, and that he discovered it by this sound when at the distance of ten rods—As he approached it his nose was assaulted by a most villanous smell—that there was no snow for several feet around this spot, nor the least appearance of there being in summer any vegetation—From this account I was certain it must be a discharge of Hydrogen gas—from a bed of decomposing pyrites or fossil coal both of which exist in large quantities in this neighborhood—about a month since in company with some gentlemen of Marietta, I had the satisfaction of seeing my suggestion completely verified—the moment the blaze approached it a large elegant sheet of fire bust forth, of the same color and appearance as that of burning spirits—There are two spots about a rod from each other that afford this gas, and for several feet around by pushing down a stick and withdrawing it, a flame is instantly kindled on the application of fire—there was now no vegetation within six or eight [feet] *of the spot—we staid by it about an hour and left it burning with the same rapidity it did the moment it was first kindled—I was told by some people who visited it three days after that it was then burning, and that it was with considerable difficulty they could extinguish it. The land in the neighborhood is hilly and broken, but rich, and well covered with timber —ny information, you may wish to obtain, respecting this country, and its mineral productions, so far as my knowledge extends, I shall be happy in affording—*

With sentiments of respect I am &c

S. P. Hildreth[3467]

Barton's comments on the phenomena and letter of acknowledgement, if there had been one, seem not to have survived. He did write on 24 September 1810:

Sir:

I have this day received your polite letter, with several specimens of minerals. I beg you to accept of my thanks for them. Every thing of this kind, and whatever relates to the natural history of your interesting country, will be acceptable to me: to no one will they be more acceptable. And I shall be glad to make a public acknowledgement of whatever you may communicate to me...

P.S. The specimens which you sent are bismuth. Whether native may be doubted. I beg you to give me all the information you can concerning these specimens. Are you confident, that they have really been found in

---

2487 Barton papers, APS. This copy varies from the original seen in Dawes Arboretum, Ohio. Albert P. Mathews in *DAB*.

Ohio? In what part of the State? What are the peculiar features of the surrounding soil? and can you not furnish me with other and larger specimens? Bismuth is so important a mineral in the composition of tipes [types] *that if this does really exist in abundance in your country, the persons upon whose lands it's found, are indeed rich.*

Let me hear from you soon.

BSB

exact copy[2488]

From New England came information. Dartmouth professor John Hubbard wrote 27 August 1807 to the "Honorable" Barton about reports he had received on the Mooshilloch Mountains, presumably the White Mountains of New Hampshire, and their measurements.[2489] He confirmed Manassah Cutler's figures for the summit: 9,000 feet. Rev. Cutler had made two trips up the White Mountains, the second with Professor Peck in July 1804. Hubbard's letter had been "favoured" by Mr. Rumsey, who also brought rock specimens to Barton on his visit to Philadelphia 1 October 1807. It was probably Hubbard who encouraged Frederick Hall (1780–1843), described by the college's president Atwater as a gentleman of "unblemished character" and "very desirous of being useful to his fellow creatures,"[2490] to present his mineral collection to Dartmouth. Hall and George C. Shattuck (Audubon's Shattuck bunting), a pupil of Barton, were in the same undergraduate class at Dartmouth. Hall graduated in 1803 and three years later was appointed professor of mathematics and natural philosophy at Middlebury College. Aware that Yale had sent his friend Silliman off to Europe for background enrichment, Hall requested the same privilege from Middlebury. Silliman advised Hall to carry letters of introduction from Barton, and in return he reported to Barton from London, 16 June 1807.

He also reported:

Paris 24 March 1808

Dear Sir,

I have lately received a letter from Sir Charles Blagdon, formerly secretary of the Royal Society of London, in which he gives an account of an important chymical discovery, which Mr. Davy, a lecturer in the Royal Institution, has recently made. This indefatigable professor has, by means of Volta's galvanic pile, discovered the bases of potash & soda. 'He has obtained them, separately,' says Sir Charles, 'and they look like metals, both in their solid & fluid form. They also combine with metals, preserving this metalic appearance. With oxygen they recompose potash and soda.'

The French chymists, with eagerness caught this intelligence, repeated the necessary experiments, and found a result similar to that of Mr. Davy. Messrs. Ghinard & Gay-Lussac, two of the most perservering & distinguished chymists of the age, have continued to torture these substances in a variety of ways, and have, at length, learned that they can be decomposed by a chymical process, without the aid of galvanism. The decomposition is effected by combining these alkalies with carbon & iron, by means of a very high temperature. From a combination of carbon & potash, or soda, results a black mass, which suddenly inflames when placed in contact with the air, or plunged in water. The metal is obtained perfectly pure, when iron is employed instead of carbon.

2488 Barton papers, APS.

2489 Barton papers, APS.

2490 David Mitchell Stameshkin, "The town's college, Middlebury College, 1800–1815," Ph.D. thesis, University of Michigan (Ann Arbor, 1978), 84.

Messrs. Ghinard & Gay-Lussac have already submitted the metal to a number of interesting trials, the success of which will soon be made public. Much is expected from their labors, and indeed, it is generally believed, here, that this discovery will gradually lead to others of equal and perhaps, superior importance. As the metals of potash and soda can now be easily procured in abundance, the relations, which they sustain to other substances, will undoubtedly be made the subject of chymical investigation.

It is Mr. Davy's opinion, 'that all the different earths consist of bases, of a peculiar metalic nature, having a very strong affinity for oxygen, by uniting with which, they form those earths respectively.' He believes that he has already made visible, by the assistance of galvanism, the basis of the one called barytes.

I make this communication, Sir, in hope that the subject will be sufficiently interesting to engage you, and other philosophers on your side the Atlantic, to unite your labors with those of the English & French in this new field of physical inquiry...[2491]

Barton marked the letter-covering "Received July 7th, 1808," but did not mark it "answered." In Paris Hall also visited mineralogist Abbé Réné Juste Haüy (1743–1822) of the French Academy of Sciences, noted crystallographer, who showed him "with great politness" his "philosophical instruments" and cabinet of minerals.[2492] Whether Hall visited Scotland and met Professor Thomas Hope at the University of Edinburgh, to whom he carried a letter of introduction from Barton, is not recorded. From the detail and cordiality of the letter it is evident that in New England Barton was regarded with esteem.

On Frederick Hall's return to the United States in February 1809 he found his expenses had been much more than anticipated. Since Middlebury could not raise his salary as requested, sixty-nine of the townspeople responded so that for the next two years his salary exceeded that of the college president. Hall brought sizeable sums of money to the college over the next decade, influenced donation of books to the library, and effectively displayed his large cabinet of minerals. While still at Middlebury, he was elected a Fellow of the American Academy of Arts and Sciences and the American Geological Society. His *Statistical Account of the Town of Middlebury, in the State of Vermont* (Boston, 1821) with notes on rocks and minerals included a catalogue of local plants by a student at the College, Edwin James, destined to accompany Stephen Long to the Rocky Mountains as physician, and to be the first white man to ascend Pikes Peak.[2493] In later years Hall was professor of chemistry and mineralogy at several colleges, including Trinity in Hartford, Connecticut. Dartmouth honored him in 1841. He died in 1843.[2494]

Abbé Haüy, whom Silliman, Hall, and possibly Barton, visited in Paris, and who sent exhibits to Peale's Museum, paid his respects to Barton in a letter to Archibald Bruce. Haüy reviewed a number of articles from Bruce's *American Mineralogical Journal* in French scientific journals.[2495] Haüy also acknowledged the important contribution made by the American consul David Bailie Warden for his continuing aid to scholars visiting France, and to Franco-American relations in the scientific community during this troubled period between the two countries. Warden often facilitated the exchange of scientific specimens. On 14 August 1814 from Paris he requested instructions from Barton on the shipment of mineral specimens bound for Philadelphia.[2496]

2491 Barton papers, APS.

2492 Stameshkin, *loc. cit.*, 85. Hall's later life, 86–87, 120–123.

2493 The *Statistical Account*, 38 pp., is at APS, reprinted in *Coll. Mass. Hist. Soc.* ser. 2. 9 (1832): 123–151.

2494 John Lauris Blake, *A Biographical Dictionary*, ed. 13 (Philadelphia, 1856), 562. *ACAB.* Drake, *Dictionary.*

2495 Greene and Burke, "Minerals," 59.

2496 BPL.

Dr. Louis Vallentin of Marseilles was also asked by Barton to exchange minerals for American publications, "small but well-characterized specimens with paper labels of the locus," to be shipped either in care of Warden in Paris, or directly to John Vaughan in Philadelphia.[2497]

Back in 1798 Rev. James Hall (1744–1826) of Bethany, North Carolina,[2498] had sent in to *Medical Repository* a letter he had received from Dr. James Woodhouse, an "account of a supposed artificial wall, discovered under the surface of the earth in North Carolina." Woodhouse had made a detailed chemical analysis of rocks from the "wall" and determined them to be of a natural basaltic formation. The article stirred controversy on early man in America. Not to be outdone, Barton related in his *Discourse* that he had previously, in 1796, decided the human association of the "wall" was false, his conclusions made from study of stones from the site, and that they were "naturally figured basaltes." To further convince himself before publishing his comments, he had proposed to James Norcom that he enquire about the subject on his return to North Carolina. Norcom's answer did not arrive before publication of Barton's *Discourse*. George P. Merrill, writing the history of American geology a century later, has the "wall" formation "easily recognizable as a small trap dike in granite."[2499] Norcom's letter is characteristic of the unsatisfying reports Barton received from many of his correspondents:

> *Edenton, N. C. April 20, 1808*
>
> *My Dear Sir,*
>
> *When I saw you last in Philadelphia, I remember we had some conversation respecting our Basaltic wall; and I promised to endeavour to procure for you every information on the subject which my acquaintance or correspondence with the Literary Gentlemen of N. Carolina might enable me to obtain. During the Session of our Legislature, knowing Dr. Calvin Jones to be a member, & a man of considerable learning & literary curiosity, I took the liberty of consulting him by Letter & have lately received a brief reply to the following effect: that the observations of Dr. Woodhouse & Mr. Lewis contained all the information he possessed; that the essay said to have been published in a State paper by a Physician residing near the spot, was the production of a Dr. Hall, whose remarks have been made public in a Repository of New York; & that popular curiosity & enquiry relative to the wall were now nearly asleep. Dr. Jones, however, promised me, to enquire of his friends & correspondents, & to favour me with the result of his researches, which, I shall punctually & faithfully transmit you...*[2500]

C. W. Lewis of "Sweete Springs, Virginia," now in Monroe County, West Virginia, wrote 14 July 1809: "By the politeness of Mr. Clarke of Philad., I am enabled to transmit some ore found in great abundance in the vicinity of this place to You—The man on whose land it is found is very anxious to have an analysis of it, & the result made known to me by letter." Then after writing of a "singular Rat" in a post script Lewis wrote: "Dr. B—will mention the analysis of each bit of ore, according to its respective number.—C. W. L."[2501] Was this Lewis a relative of Meriwether? Barton kept no copy of his response. He probably added the specimens to his growing collection.

2497 Barton papers, APS. Undated copy of letter, incomplete.
2498 R. W. Conner in *DAB*.
2499 Merrill, *Geology*.
2500 Barton papers, APS. On Dr. Calvin Jones (1775–1846), Edward Preble in *DAB*.
2501 Barton papers, APS.

More satisfying was the contribution of Bishop Madison, who had entertained Barton on his trip through Virginia in 1802. His "Notices of the Warm Springs in Bath County," appeared in *Philadelphia Medical and Physical Journal.* Note 3 reads "Dr. Barton tried the effect of the water upon small fish: they died after the immersion within fifteen or twenty seconds, previously giving indications of great uneasiness." Note 14 states that the stream "deposits calcareous earth, in such quantity as to form many little falls, or cascades. The quantity deposited is, however, greatly inferior to that which takes place in the Sweet-spring waters." The bathing is "delightful." In conclusion, and realizing a lack of essential equipment, Madison reported that the water contained "carbonic acid, sulphate of magnesia, and iron, together with calcareous earth."[2502]

In the same issue of the *Journal* the editor, Barton, reported:

> *...a large mine of Manganese has been discovered in the county of Shenandoah in the great calcareous valley between the Blue-Ridge (or South Mountain) and the North-Mountain. Mines of this useful mineral have been discovered in other parts of Virginia. &c.&c.*[2503]

The final Supplement of Barton's *Philadelphia Medical and Physical Journal* (1809) contained a paper from the pen of Dr. William Meade, a physician from Ireland, and a mineral collector, who practiced for years in Philadelphia, then moved to Newburgh, New York. His "Mineralogical and chemical account of the Yellow Springs in the County of Chester, in Pa.... by a gentleman now on a mineralogical tour of the United States" was followed by a paper on the chemical properties of coal "lately discovered at Rhode Island." Meade contributed five articles to Bruce's *American Mineralogical Journal.* In 1817 he published in Philadelphia a book on the mineral waters of Ballston and Saratoga, New York. He and Nuttall "were apparently the best of friends." John Torrey of Columbia College testified that Meade was "one of the most intelligent mineralogists you ever knew, having the history of every mineral at his *fingers ends.*"[2504]

After a visit and discussion, John Leonard Prescott wrote Barton from Charleston, South Carolina, 16 March 1813:

> *On my departure from Philadelphia you were good enough to promise me a few mineral specimens to add to my little collection; as that study is my favorite one & myself the only person turning any attention to it here. I should be happy to receive any duplicates you may be willing to spare.*

Prescott had put on ship board for Barton a young eagle and so had requested a return.[2505] From A. M. McGhee in Huntsville, Mississippi Territory, 10 June 1813 came the note:

> *As I passed the Cumberland Mountain my particular attention was directed to the discovery of Ising-glass, but I was disappointed in not being able to discover a single Particle. The prevailing rock is a sandstone intermixed with a small proportion of Limestone.*[2506]

Barton's last geologic effort appears to have been his letter to Archibald Bruce (1777–1818), born in New York City, who had studied medicine under Hosack, but earned his M.D.

2502 *PMPJ* 2 (1805) Pt. I: 62–65.
2503 *PMPJ* 2 (1805) Pt. I: 178.
2504 McAllister, *Eaton,* 270.
2505 Barton papers, APS.
2506 Barton papers, APS.

at Edinburgh in 1800. After two years on the continent studying mineralogy he set up practice in New York. From 1812 until 1818 he was on the faculty of Queen's (now Rutger's) College.[2507] In 1810 he established the *American Mineralogical Journal*, the only volume of which ran to 1814.[2508] Shortly after his return from his summer trip to Virginia in 1805, Barton submitted a hurried article: "Mineralogical Notice reporting Fluate of Lime from Virginia...in a Letter to the Editor."

> *Sir,*
>
> *I send with this, a small specimen of Fluate of Lime, unquestionably the produce of our country.*
>
> *This substance, so common in some parts of the old world, has recently been discovered in Virginia, in the county of Shenandoah. It is found, in considerable quantity, on the second great range of our mountains from the Atlantic, commonly called the 'North Mountain,' and at the distance of a few miles from Woodstock, or Miller's-town, the county-town of Shenandoah.*
>
> *I am not yet able to communicate to you all the information you might wish for, concerning the precise location, of this Virginia fluate. I am assured, however, that it occurs in loose pebbly-like pieces, in the fissures between the limestone...In close connection with, or at least in the near vicinity of the fluate, is found abundance of a beautiful white carbonate of lime, with rhomboidal form.*
>
> *Considerable quantities of manganese exist at the distance of only a few miles from the place where the fluate is found...*
>
> *P.S. the preceding paper was written before I had an opportunity of seeing the first Number of your Journal. Your work informs me, that the fluate of lime has been found in other parts of the United States. But I think it has not yet been found in such abundance, in an any of the places which you mention, as in Virginia.*[2509]

Bruce's article, "Mineralogical Notice respecting American fluate of Lime" had appeared in the first number of his *Journal*, as had his article on "magnesia."[2510] Bruce was evidently concerned about the source of Barton's information, and so on 8 September 1810 Barton wrote:

> *Dear Sir*
>
> *I have not in my late* [tour?] *collected any additional information of consequence, concerning the locality, &c, of the Virginia Fluate of Lime. The want of a guide when I passed through Woodstock, prevented me from visiting the spot on North Mountain where the substance is found. Be assured, however, that the facts which I communicated in my letter, are correctly stated; and that the quantity of the fluate is very great. I shall soon be able to supply any of my mineralogical friends with specimens of it.*

Barton then turned to another subject he knew would interest Bruce:

2507 James A. Phalen in *DAB*; Silliman's *Amer. J. Sci.* 1 (1819): 299–304, biography and portrait.

2508 Greene and Burke, "Minerals," 56–57, detail Bruce's problems with his *Journal*.

2509 *Amer. Mineral. J.* 1 (1810–1814): 79–80.

2510 *Amer. Mineral. J.* 1 (1810–1814): 32–33, and 26–30, respectively.

I possess a copy of the Index Supellectilis Lapidae of the celebrated Professor Gronovius of Leyden, printed at that place in 1740.[2511] *This is a pamphlet of about 300 pages, and is little else than a catalogue of the professor's collection in minerals, which appears to have been considerable, considering the time at which he wrote. My only motive for mentioning the work to you at present, is that the author, who was well versed in most branches of natural history, speaks of a specimen of Tin ore from Pennsylvania. He defines it 'Stanium polyhedron regulare purpurescens Pensylvanicum.' Index &c. p. 10. Gronovius does not tell us from what part of Pennsylvania, or by what hands he received this specimen, which I cannot hesitate to believe was really Tin. The Leyden professor corresponded with our countryman John Bartram, well known as an indefatigable cultivator of natural history. I have ascertained the fact, that Mr Bartram was in the habit of furnishing Gronovius with minerals as well as plants; and I think it probable that the specimen in question was transmitted by Bartram, either directly, or through the hand of Peter Collinson, the common friend of Gronovius and our ingenious countryman.*

It is more difficult to determine, in what part of Pennsylvania this 'Stanium polyhedron regulare purpurescens' was discovered. Perhaps from the neighborhood of the Perkiomen mines,[2512] *whence I think it probable Gronovius received the three specimens of ores of Zinc, which he mentions, as from Pennsylvania, in the same Index, p. 9.*

In the present very limited State of our knowledge of the mineral productions of our part of North America the above notice of the existence of Tin in Pennsylvania, may, perhaps be deemed worthy of your attention. I need not tell you, that this metallic body has been found in Mexico. Mr. Roxas has even informed me that there are mountains of it in that country. I have ascertained, by facts and circumstances, sufficiently Satisfactory to me that Tin and its uses were not unknown to the Floridian Indians, when these Indians were visited and disturbed by the Spaniards, between the years 1539 and 1543.[2513]

I am, dear Sir, with much respect [etc].[2514]

Bruce was elected a member of the American Philosophical Society 16 October 1807.[2515] Benjamin Silliman, who had studied in Philadelphia as early as 1802 with Woodhouse, Seybert, and Barton, was to play a leading role in the development of the study of mineralogy in this country.

2511 The book is now missing: Ewan, "Barton's library," 328.

2512 Perkiomenville, Montgomery Co., Pennsylvania. Warden, *Account* 2: 64, mentions copper ore as found at Perkiomen, and lead ore with a trace of silver on Perkiomen Creek twenty miles from Philadelphia, but does not mention tin or zinc.

2513 Hernando DeSoto (ca. 1500–1542) searched for minerals in the peninsula of Florida and went to his grave in the Mississippi River. Herbert I. Priestley in *DAB*.

2514 Barton papers, APS, his copy.

2515 APS, "Minutes," 400.

Chapter XXII

Elements of Zoology

"Our first object...should be to render more perfect the catalogue of our indigenous animals. Many of these, are unquestionably, unknown to us. This is especially the case with respect to the Fishes, the Amphibious animals, the Insects, and the Vermes...I believe one tenth part of all the North American quadrupeds [are undescribed]*...the field for discovery and observation is incalculably large...But Natural History is not merely a science of Names and Arrangements. Higher objects should claim the attention of the philosophical naturalist."*
—Barton in *Discourse*, 15-16

From his first reading of *History of America* by the principal of the University of Edinburgh, while he was enrolled in medical school there, Barton had been affronted by the belittling of American climate and animals. William Robertson had never visited America but had relied heavily on early writers on the area, especially on Buffon's *Histoire Naturelle* (Paris, 1749-1767, 15 vols.). One passage from Robertson that particularly must have irked Barton read:

> *The uncultivated state of the New World affected not only the temperature of the air, but the qualities of its productions. The principle of life seems to have been less active and vigorous there, than in the ancient continent. Notwithstanding the vast extent of America, and the variety of its climates, the different species of animals peculiar to it are much fewer in proportion, than those of the other hemisphere...Nature was not only less prolific in the New World, but she appears less vigorous in her productions. The animals originally belonging to this quarter of the globe appear to be an inferior race, neither so robust, nor so fierce...America gives birth to no creature of such bulk as to be compared with the elephant or rhinoceros, or that equals the lion or tyger in strength and ferocity.*

In what may have been a lecture to a natural history class, Barton declared:

> *It must appear obvious, indeed, to any person who is acquainted with the writings of Buffon and DePauw, in particular, that upon almost every subject connected with the Natural History of America, these writers have erred, chiefly, because they have had a system to gratify.—That DePauw has erred, is a matter of very little consequence:—his celebrated Researches show him to be a man of learning and of genius;—but they equally show him to be a Stranger to Truth...That Buffon has erred is much more to be lamented;—not only because his influence, as a writer, is much greater...but also because the errors of this great French Naturalist are most intimately blended, with some of the chastest and most beautiful truths in Nature:—unfortunately, too,—the system, and the errors of Buffon are supported by the most astonishing powers of eloquence and fancy.*
>
> *From the new views which have, lately, been held out to us by our countryman Mr. Jefferson, and by the Abbe Clavigero,—it appears that two of the principal propositions of Buffon, respecting the quadrupeds of the*

> *New-World, are altogether without foundation: I mean that proposition, which maintains that America furnishes but a small number of this higher class of animals, in proportion to a given extent of climate, and of territory, in the three other great sections of the earth:—and that proposition, which asserts that the quadrupeds of the new, are smaller than those of the Old, World.—The truth, indeed, is:—that the more intimately we become acquainted with America;...the more reason we have for maintaining that, in this great continent Nature is neither inert or unprolific, in her operations, or in her works.—She, here, exhibits as much variety;—She, here, exhibits as much beauty as in any other part of the world; and if She does not exhibit all that Monstrous Obscenity which strongly characterizes the features of Africa...Her animated productions are as vigorous and with a very few exceptions, as long lived...If She has not given birth to the Elephant, the Rhinoceros, the Hiopopotamus, or the Giraffe, She appears to have produced an animal much larger than either of them: an animal which She once enjoyed, in common with Asia.*[2516]

Zoology after botany took more of Barton's time than any other of his multitudinous interests. Here his enthusiasms were the life histories and *mores* of opossums, serpents, jerboas, sirens, and tuzas—more than just their proper, all-American, classification. His interests in engendering, feeding, migrations, torpidity, and life-span initiated environmental concerns that have come down to us. The thirty-nine paragraphs that introduce his *Fragments* contain many queries regarding unverified facts concerning birds he had noticed—seasonal movements, food preferences, state of vegetation or the appearance in an area of a particular species—in short, the biotic factors recognized today. As usual he sought data from colleagues, pupils home on leave between sessions or on graduation hung their shingles especially in new rural communities, facts from tavern keepers, Indian agents, and Indians, missionaries, editors and travelers.

His two leading sources for animal data were William Bartram and Rev. Heckewelder. From about 1794 on he plied Heckewelder with questions on grasshoppers, Nine-killers, paroquets, control of cucumber pest, opossums, rattlesnakes, Jumping mice, whether the "king's evil was known among Indians," and much more. In Barton's letter of 20 April 1796 he remarked "as you have had an opportunity of seeing the male and female [opossum] in the act of coupulation, I shall be glad to hear something particular on the subject from you. Were they long in the act? What's their position?" "You doubtless find me a very troublesome correspondent," wrote Barton on one occasion. "I often most sincerely wish that you would impose upon me some task."[2517] The "White negro" was a topic in Barton's letter of 29 August 1796, and in his eighth letter that year he sought information from Heckewelder, then at Bethlehem, on bird migrations. On 20 November 1797 Barton asked about the prevalence of goitre among the Iroquois, and forwarded a publication for Rev. Zeisberger.[2518]

Classification was still a necessity, and Barton's interest in the classification of mammals has passed almost unnoticed. It may well have been stimulated by his study of the Jumping mouse, *Zapus hudsonicus*, which in 1798 he called the "American jerboa, Dipus americanus."[2519] In his efforts to assemble literature on zoology he sought a copy of J. C. P. Erxleben's *Mammalia* (Leipzig, 1777)[2520] the only part published of the planned "Systems

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2516 Barton papers, APS.

2517 Gilbert collection, 1: 135, CPSP.

2518 Letters of Scientists, CPSP.

2519 *Trans. Amer. Philos. Soc.* 4 (1799): 114–123.

2520 *Systema Regni Animalis per Classes ordines, genera, species, etc. Classis I. Mammalia* (Leipzig, 1777), "One of the most important contributions to the study of and the controversial literature of the Eighteenth Century classification," Wood, *Lit. Vert. Zool.*

Regni Animalia." Barton's undated copy of his letter, probably to J. F. Blumenbach, refers to this Göttingen professor's method of classifying mammals,[2521] although Barton does not elaborate:

> *It is now a long time since I have received a letter from you. Along with my last letter, I transmitted to you a copy of my 'New Views,' and some other works. I hope you have received them. I now send to you a copy of my 'Fragments,' and a copy which I shall thank you to present, in my name, to the University of Göttingen. The other parts will appear in the course of the next spring, and will give a pretty full account of our quadrupeds, and other mammalia. This part I shall send to you.—I shall endeavour to procure for you the Indian matters you wish to have. I shall be greatly obliged to you if you will endavour to procure for me a copy of Erxleben's work on the mammalia. In return, I shall transmit to you a copy of some other work as valuable. I am extremely anxious to see the work, particularly as I am now engaged in forming a new arrangement of the mammalia. I am extremely pleased with your method, but I think improvements may be made. You, who are as candid as learned, will readily excuse this observation.—*[2522]

Barton had been inspired by Pennant's *Arctic Zoology* (London, 1783–1784, 2 vols.), but he never related his animal lore to biblical accounts as did Pennant. He was convinced that men and most animals crossed from Asia into America, and that they were as magnificent on this continent as elsewhere.[2523]

"One of the grandest and most important questions in natural history" is the Asiatic origin of the Indian and some of the quadrupeds. "Whatever relates to their instinctive manners, their useful or injurious effects in the economy of nature, their torpid condition, their anatomical fabrick, are all questions worthy of our attention," he wrote of the quadrupeds native to this "portion of the earth." "A complete natural history of the Beaver, or the Opossum, would be a real treasure to the philosophical world."[2524]

"What," he queried members of the Philadelphia Linnaean Society, "can be more interesting than histories of the species which formerly inhabited this Globe, and have now entirely disappeared?" Of these "extinct" species "No naturalist, no philosopher, no one tolerably acquainted with the history of natures' works and operations will subscribe to the puerile opinion, that Nature does not permit any of her species of animals, or vegetables, to perish."

Barton then comes very close to a statement of evolution. "There is a passage, by gradual and intermixing characters, from species to species, and from genus to genus—"[2525] He had been reading over the years books in his library: Linnaeus, *Praelectiones in Ordines Naturales Plantarum* (Hamburg, 1792) as edited by P. D. Giseke; Buffon, *Histoire Naturelle*; Erasmus

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2521 Johann Friedrich Blumenbach (1752–1840), *Beyträge zur Naturgeschichte* (Göttingen, 1790), a pamphlet sent to Barton, now at APS. See also our Chapter XII.

2522 Barton's rough copy. Barton papers, APS.

2523 "Pennant stated that the animals of the ark must have migrated to the Americas...to prevent the Old World from becoming overpopulated...Pennant attempted to salvage the Mosaic account of the Deluge by producing as natural an explanation as possible, yet...how could tropical animals withstand arctic conditions of Siberia in their migrations to the New World? Why did llamas and rheas migrate all the way to South America, while bison and beavers halted in North America? How did some of the more sedentary creatures, such as sloths, manage to make their journeys at all? Pennant stated that God's will had directed animals during their circuitous migrations." Quoted by Michael Kinch, "Geographical distribution and the origin of life..." *J. Hist. Biol.* 13 (1980): 96.

2524 *Discourse*, 19.

2525 *Discourse*, 20.

Darwin, *Phytologia*; Cuvier, *Recherches*; by men all in the forefront of intellectual thought in natural history.

They had rejected the ancient and still current *scala naturae*, which postulated a creation direct from the simplest form to Man—"But," he continued, "there is no such thing as a Chain of nature": and then he well may have confused his listeners by his elaboration, "an absolutely necessary dependance (on this earth) of one species upon another. Plato's chain of nature is a dream. The metaphysical views which that sublime genius has given us of the intertexture of species, have spoiled by their influence, in succession, the philosophy of Greece, of Rome, and of America. So powerful is the influence of authority [political and religious]! So propense are men to embrace systems, without an examination of the solidity of their foundations."[2526] The natural world was composed of multiple relationships despite church and government doctrines.

A surviving fragment of a lecture prepared for the American Linnaean Society, and probably delivered before his natural history class, reads:

> *Before I proceed to lay before the Society my Idea for a new Arrangement of the Mammalia, I think it will be proper to make some remarks on the systems of some preceding writers, particularly that of Linnaeus, Klein,*[2527] *Brisson,*[2528] *Pennant, and Blumenbach. I will not pretend to deny that my principal object in giving this Sketch of the systems of these celebrated naturalists is to show where these systems are unnatural or defective, and to point out the necessity of endeavouring to establish a new and more just arrangement, in which the order of nature shall be more consulted. I am aware that this will be thought a delicate mode of proceeding: but this circumstance must not deter me from my plan. Though still young, I have grown old enough to see the propriety of shaking off the trammels of my early school: in particular the trammels of my education as a naturalist.*

On Pennant he writes:

> *I proceed, in the next place, to take some notice of the system of my late learned and excellent friend Mr. Thomas Pennant: a gentleman who perhaps has done as much for the science of natural history as any naturalist, Linnaeus and Pallas*[2529] *excepted, in the present century.*
>
> *Mr. Pennant candidly claims 'but a small share of originality' in his distribution of quadrupeds. I copy, says he, Mr. Ray,*[2530] *in his greater divisions of animals into hoofed and digitated; but, after the manner of Mr. Klein, form separate genera of the Rhinoceros, Hippopotame, Tapier, and Musk. The Camel being a ruminating animal, wanting the upper fore-teeth, and having the rudiments of hoofs, is placed in the first order, after the Musk* [ox] *a hornless cloven-hoofed quadruped. The Apes are continued*

2526 *Discourse*, 20.

2527 Jacob Theodor Klein (1685–1759), *Summa Dubiorum circa Classes Quadrupedem et Amphibiorum in...Caroli Linnaei Systema Naturae* (Leipzig, 1743).

2528 Jacques Mathurin Brisson (1723–1806), *Regnum Animale in Classes IX Distributum...*, *ed.* 2 (Leiden, 1762). "Regarded next in authority to Linnaean productions," Wood, *Lit. Vert. Zool.*

2529 Peter Simon Pallas, *Novae Species Quadrupedum...* (Erlangen, 1778). Barton having acquired a copy. Wood, *Lit. Vert. Zool.*

2530 John Ray (1627–1705), *Synopsis Methodica Animalium Quadrupedum, et Serpentini Generis...* (London, 1693). "Important early treatise on mammals and snakes," Wood, *Lit. Vert. Zool.*

in the same rank Mr. Ray has placed them, and are followed by the Maucaucos [slow-moving, tailless lemurs] [end of fragment.][2531]

Another fragment of his discussion of systematics, particularly Linnaean, on the dentition of mammals follows:

Nor are these my only objections to an arrangement founded exclusively on the teeth. The number, the form, &c. of the teeth not unfrequently varies a good deal in the different species of the same genus. In the teeth of the elephant of Asia and of Africa, Mr. Blumenbach has remarked a very essential difference. In the former, the upper surface of the molar teeth is marked with undulated lines: in the latter, it is marked with rhomboidal figures. A species of hog, the Sus ethiopicus, or Aethiopian Hog, differs from all the other species of the same genus, in being entirely destitute of the dentes primares, or fore-teeth in both jaws, in place of which it has very hard gums. Now if the arrangement of Linnaeus were rigidly pursued, this African species must be dissociated from its congeneres in the sixth order, or Bellua, where the Swede has placed the animals of the hog-kind, and referred to the order Bruta, along with the elephant, the sloths, ant-eaters, &c. it being the character of the animals of this order to be destitute of the fore-teeth. But a more striking case occurs. According to Linnaeus, the genus Myrmecophaga, or Ant-Eater, is entirely destitute of teeth of every kind. Of late, however, there has been brought from Africa a new species of this genus, [perhaps referring to the pangolins (*Manis*) or aardvark (*Orycteropus*), both African edentate mammals] *that is furnished with teeth. But, perhaps, no genus hitherto discovered, affords a more prominent and extensive objection to the system of Linnaeus than the genus Vespertilio, or Bat. Some species have four dentes primares, or fore-teeth, in each jaw, such as Vespertilio Vampyrus,*[2532] *V. Spectrum,*[2533] *V. perspicillatus,*[2534] *V. Spasma,*[2535] *V. hastatus,*[2536] *V. soricinerea and V. leporinus.*[2537] *Some species have four in the upper jaw, and six in the under jaw. viz. Vespertilio auritus, V. murinus, V. Noctua, V. Serotinus,*[2538] *V. Pipistrellus,*[2539] *V. Barbastellus,*[2540] *and V. hispidus.*[2541] *Some species have four teeth in the upper jaw, and eight in the under jaw: viz. Vespertilio pictus.*[2542] *Some have two fore-teeth in the upper, and six in the under jaw: viz. Vespertilio nigrita.*[2543] *Some have two in the upper and four in the lower. Some have two in the upper and none in the lower: viz. Vespertilio cephalotes.*[2544] *Some are destitute of fore-teeth above but have four below:*

2531 Barton papers, APS.

2532 [*Pteropus vampyrus* L., Large Flying Fox Bat. MSW.]

2533 [*Vampyrum spectrum* L., Spectral Bat. MSW.]

2534 [*Carollia perspicillata* L., Seba's Short-tailed Bat. MSW.]

2535 [*Megaderma spasma* L., Lesser False Vampire Bat. MSW.]

2536 [*Phyllostomus hastatus* Pallas, Greater Spear-nosed Bat. MSW.]

2537 [*Noctilio leporinus* L., Greater Bulldog Bat. MSW.]

2538 [*Eptesicus serotinus* Schreber, Serotine Bat. MSW.]

2539 [*Pipistrellus pipistellus* Schreber, Common Pipistrelle Bat. MSW.]

2540 [*Barbastella barbastellus* Schreber, Western Barbastelle Bat. MSW.]

2541 [*Nycteris hispida* Schreber, Hairy Slit-faced Bat. MSW.]

2542 [*Kerivoula picta* Pallas, Painted Bat. MSW.]

2543 [*Scotophilus nigrita* Schreber, Schreber's Yellow Bat. MSW.]

2544 [*Nyctimene cephalotes* Pallas, Pallas' Tube-nosed Fruit Bat. MSW.]

viz. Vespertilio lepturus, and ferrum-equinum.[2545] *One species, a native of the United States, the Vespertilio noveboracencis,*[2546] *is entirely destitute of fore-teeth, both above and below.*

Thus according to Linnaeus's idea, if it were rigidly pursued, some of the bats must range in the same section along with all the varieties of the [end of fragment].

The American naturalists of Barton's era who reclassified *Vespertilio* species were Rafinesque, LeConte, and Say.

"Notes from Dr. Bartons Lectures on Natural History, or Zoology 1809-1810" kept by an unnamed pupil give us an idea of the material covered in class. They are here excerpted:

1: *Natural History includes 'Zoology, Botany, Mineralogy, Geology, Meteorology, & Hydrology, or Hydrography.' Aristotle to Rome (100 elephants, 150 'lines' exhibited at one time).*

2: 9 *December 1809: General physiology, comparative generation among animals. 'Barton observed that he had not fully made up his opinion on the subject of the variety or specific differences of the human species of Mankind.' He objects to the Linnaean classification of Homo, especially the division of 'monsters.' He has seen as many as ten embryos in the marsupium of opossum.*

3: 13 *December. anatomical differences, including of Indians, regarding hair, etc., organs of sense.*

4: 16 *December. eye, ear, nose, taste.*

5: 23 *December. Skeleton. Frequently cited Blumenbach.*

6: 28 *December. Teeth, talks of 'Tusa'* [Tuza] *of Georgia; 'refers to Pennant.'*

7: *Begins survey or Orders.*

8: 30 *December. Duck billed platypus.*

9: 3 *January. Ferae.*

10: 6 *January. Rodentia; Dipus americanus in Peale's Museum.*

11: *Honey is consumed by an animal which Barton called 'Dypus melevora.'*

12: *Ruminants. 'Cameleopardus. Of this no specimen in Museum Pealeanum.'*

13: *Aves: Barton follows the six classes of Linnaeus.*

14: *Cete: addendum on Aves. Last entry is 'Falco or Eagle. has bill hooked. Caput peltis, Lingua bifid. This genus comprehends the Balled Eagle.*[2547]

Animal behavior, the instincts and *mores* were topics for observation shared with his friend on the Schuylkill. On 14 September 1795 Barton sent a copy of Gilbert White's *Natural History of Selbourne* for Bartram's "amusement," and with a note:

2545 [*Rhinolophus ferrumequinum* Schreber, Greater Horseshoe Bat.]

2546 [*Lasiurus borealis* Müller, Red Bat.]

2547 Barton papers, 1 a/8, CPSP. Cameleopardus refers to the Giraffe, *Giraffa camelopardalis* L. The Balled (Bald) Eagle is *Haliaeetus leucocephalus* L. MSW. ANI.]

> *I send along with this, for your perusal, a new work, of considerable merit. I think, the chapter on Instinct will please you. As you read this chapter, I wish you would put down upon paper your remarks upon it.*
>
> *Do not lose sight of the anecdotes concerning wasps & spiders. I am persuaded, they will be acceptable to our Society.*

After reading, Bartram turned the letter over and commented "that this circ[umstance] so very worthy of remark shows benevolence & affection in the Cat I readily believe,–but be[cause] she believes them to be her own Young, I do not believe. But rather think she knew them not to be her young, & that her love & attachment were either from motive of pure affection & commiseration, or from Gratitude for the pleasure & delight she received from suckling them & ease & relief from the pain of her paps replete with milk, besides averting her affliction for the loss of her own little offspring.

> *I have often seen with the greatest delight, several kinds of small Birds feeding the young of other kinds or species, that have been abandoned; even sometimes when their own young were yet under their care, in a helpless state. From these & many other circumstances & occurrances who daily fall under the notice of an accurate observer, if we could intirely divest ourselves of prejudice & love in favour of our Own Species so as to judge & decide impartially & freely. It evidently appears that the Animal creation are endowed with the same passions & affections We are, & that these affections operate after the same manner; It is too true I fear that Malicious Orders abound & predominate in Man. Not only in their Actions among one another, but toward the Animal Creation.*[2548]

The "solicitous care" of some fishes for their offspring was of particular fascination. Former pupil Meriwether Lewis wrote on another topic:

> *I am now enabled to give you a fact relative to the Natural History of the Wild Goose of which you wished me to be acquainted–The Progeny of this, & the tame Goose, will not propogate: This I am assured of by Mr. Rader of Greenbrier County in this State* [now West Virginia] *who has a large flock of the mongrel breed.*

In return Lewis requested identification of ore samples.
On page 14 of *Studies of Nature* Barton added in a footnote:

> *I flatter myself that some of the views of Saint-Pierre will be accomplished, in a work in which I have long been engaged. 'On the Instincts and Manners of all the known Families of Animals.' Considerable portions of this work, which however it will demand years of additional labour and research to accomplish even to my own satisfaction, have been publicly read, at different times, to my classes in the University of Pennsylvania. A fragment, or sketch, of the larger and more finished work, I hope to be able to print, for the satisfaction of the curious and particularly of my friends, in the course of three or four years. The work will be embellished with a considerable number of plates, engraven after original drawings, by the ablest Artist.–B.S.B.*

[2548] Barton papers, vol. 1, p. 9, HSP. Account of the cat [*Felis catus* L.] and baby hare [family Leporidae] is in Gilbert White, *Natural History and Antiquities of Selborne* (London & New York, 1891), 189. The first edition was in 1789. On Rev. White (1720–1793) see Wood, *Lit. Vert. Zool.*; Eric W. Groves in *DSB*; *DNB*.

This "work" was another dream never accomplished. From the remnants of his manuscripts, and the short papers on zoology he managed to put into print, we gauge his aspirations. He considered:

> *Zoology is the history of the Animal Kingdom. That is, unquestionably, the most important branch of Natural history. It involves a most numerous set of living beings, whose structures and functions, whose instincts and manners, whose uses, are eminently entitled to the attention of Philosophers.*[2549]

Samuel Miller, after noting Barton's other contributions, wrote: "Still more recently Dr. Barton...has made very respectable additions to the zoological science of our country, and displayed a degree of genius, diligence, learning and zeal,...which do honour to our Republic, and which bid fair to place him among the most accomplished and useful naturalist of his time."[2550] By 1806 Barton was confident that he had collected enough material from his own observations and those of his correspondents to arrange for illustrations. A letter of 10 May 1806 from Pierre Turpin to John Vaughan deals in part with Barton's commission:

> *I repeat what I conceive to be D Barton's wishes please to communicate it to him for me*
>
> *1. That the whole plate destined to form the frontispiece & to give a Complete Idea of the great annalogy which exists between animals & vegetables, is to be designed & engraved by the best Paris artist—two proofs to be sent to him, that he may fully know the state of perfection it is in & direct any change.*
>
> *2. To design the plate of the Sexual System & to wait his orders as to engraving.*
>
> *3. To make an exact design of the three small quadrupedes & to send them as soon as possible.*
>
> *4. An exact design of the Insects—the characters of which are to be magnified.*
>
> *I will do all this quickly & will Send it to you Shortly. I have already informed D Barton that I could not get the plates of his Elements of Botany colored to please me; & to prove it & to shew the stile of such work here, I send for him two colored plates (proof) for my work on the plants round Paris—They have been taken off by one pull of the Press only—& altho' not as well done as the succeeding copies—yet sufficiently follows Nature.*
>
> *I do not write to him, but beg with these plates that you will present him with a copy of my Memoir*[2551] *in an organ little known to Botanists.*
>
> [BSB has recorded:] *Received July 14, 1806*

On 20 June, with no date, but certainly in 1806, Barton wrote [to the printer?] "Please return the subscription paper for Zoology with Dr. Barton's compliments to Mr. Conrad," publisher. To the note the recipient had added "It has been at the binders two or three days to have a piece added, will get it this afternoon and send it to you." Barton sought support through a broadside, *Proposals for Elements of Zoology*, issued 14 October 1806, which

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2549 *Discourse*, 21.

2550 *Brief Retrospect*, 1: 127.

2551 *Mémoire sur l'organe par lequel fluide fecondant peut s'introduire dans l'ovule des végétaux* (n.p., 1806). Copy in APS.

outlined the scope, price and other details, and announced that the work would be illustrated by not less than ten plates by both American and European artists.[2552]

A list of subscribers–the last signatures torn from the papers–was attached to the *Proposals*:

***John A. Washington**, Mt. Vernon, Virginia*
***John A. Thornton**, Culpepper, Virginia*
***Rubens Peale**, Museum, Philadelphia*
***W. S. Allison**, Philadelphia*
***Robert Lusk**, Philadelphia*
***Rev. S. B. Wylie**, Philadelphia*
***David Watson**, Lancaster*
***Wm. Elmer**, Philadelphia*
***John H. Borman**, Fredericksburg, Virginia*
***David Sheppard**, Philadelphia*
***George Bozman**, Edenton, North Carolina*

In Lancaster his brother Matthias on a Sunday evening wrote "I have obtained 13 good subscribers to your History of Animals." Felix Robertson wrote from Nashville on the 19th of March 1807, that he regretted not having had more time to devote to collecting subscribers but he had obtained fourteen, all of Nashville: John R. Bedford; Thomas Claiborne; Thomas A. Claiborne; Robert B. Currey; John Dickinson; Hanson Dotlett; Kanes Hennen; Boyd McNairy; Nat A. McNairy; Alex Porter; William B. Robertson; Thomas Swann; and William Wright. Felix Robertson promised he would write again soon announcing more subscribers.[2553]

Joseph Carrington Cabell (1778-1856), friend of Jefferson, who was to become his right-hand man in the founding of the University of Virginia,[2554] also was sent a copy of Barton's *Proposals for Elements of Zoology*. Barton wrote Cabell, "if the work meets with adequate encouragement I shall put it to press in March or April [1807], possibly sooner. Whatever be the execution of the work, I flatter myself that the plan of it all will be approved of." Barton sent the *Proposals* to Cabell's brother William J., one time governor of Virginia, as well. Joseph Cabell shared Barton's joy in book collecting, and during his European travels of 1803 to 1805 he added botany and garden books to his library.[2555] Cabell's association with Cuvier and other naturalists in France sweetened Barton's hopes of winning Cabell's support.

David Snodgrass of Greenville, Tennessee, "the only bookseller in the Territory," had not been able to obtain any subscriptions, although he had presented the *Proposals* to several persons and "particularly to some of our physicians," nor did he himself find it "convenient to take any at present."[2556] Barton had also sent a copy of the *Proposals* to Vermont and recorded on a scrap under the signature of "Frederick Hall. Prof. of Math. & Nat. Phil. Middlebury College, Vert." that on "Jan. 26, 1807. I put into the hands of Mr. Shattuck, Stud. of medicine 4 other copies of my Proposals for a work on Zoology."[2557] There were surely other subscribers, Jefferson for example. By 16 January 1810 he felt confident enough to write to Mr. Fry "Please to wet down the paper for the first two forms (16 pages of 'Zoology') 150 copies, all on common paper, as I do not intend to print any copies on the fine paper." He then stressed the need for "fine press work, etc. etc."[2558] Why had he switched from fine to common paper?

2552 Barton papers, APS. See Figure 72.
2553 Barton papers, APS.
2554 Cabell papers, University of Virginia Library. See A. C. Gordon, Jr., in *DAB*.
2555 Davis, *Jefferson*, 85. For William H. Cabell (1772-1853) see R. L. Morton in *DAB*.
2556 David Snodgrass, 9 June 1807, to BSB. Barton papers, APS.
2557 Barton, miscellaneous papers, APS.
2558 Barton papers, APS.

An article in the column "Miscellany" for the *Repertory* in 1804 had pictured Barton's dilemma. Entitled "Barton's Zoology," it read:

> *The progress of science in this country has indeed been slow, but extensively useful, and universally respected. To the various interests arising from the wants of a young people, as we have emphatically been called; in that strong desire for wealth which only contemplated the most certain and immediate means of its own gratification, we naturally trace the source of this apathy in the pursuit of natural science.*
>
> *In a state of society so peculiar, it is not strange that the claims of an author to reputation are not suddenly recognized; that he should look to those countries, where science is more ardently pursued, for the rewards of his labors, and that his own countrymen should in some degree consider such an award as a demand on them for patronage. Every man who has heard of Franklin and read any of his books, has found much to admire. If he be a countryman of his he acknowledges he has much to be proud of...*
>
> *But it was in England alone, that the whole of his works have been collected, and in an elegant edition for the first time presented to the admiration of his own country, as well as to the world.*

Then after lauding Barton for *Elements* "studied and recommended by all lovers of science in this country" and "highly recommended" in England, the article continued:

> [Barton] *has now in the press a work entitled Elements of Zoology. A complete work of this kind has been long wanted and as particularly embracing the habit, &c of the* [animals] *of our own country, it will we have no doubt be considered an important acquisition by the American zoologists.*

For a time encouraging progress was being made.[2559] Barton preserved his roughed-out original of a letter, undated, to an unidentified engraver in New York who might be induced to reproduce a few animal plates, especially crania. He addressed him:

> *Sir,*
>
> *I have in the press a work of considerable extent on the animals of the U. States. It will be embellished & rendered more useful by a number of engravings, some of which are now in the hands of Mr. Lawson, Mr. C. Tiebout &c. These gentlemen are instructed to give the most complete finish to their work, especially as all the engravings are intended to be after <u>original</u> drawings. I am extremely anxious, that a work which, it is probable, will have some circulation in Europe, shoud appear to some advantage, at least on the score of the plates. I am well acquainted with your great merits as an engraver on wood: and it is my wish to have a few of the plates done by you, in your best manner. If you are not too much engaged, I shall be happy to have your assistance as to two or 3 of the plates. They will be wanted by the first of June, if not a little earlier. The objects which I desire for you, are the heads (<u>crania</u>) of some of our native quadrupeds. The drawings are prepared.*[2560] *They are not finall; more than half the diameter of the page on which I write. Each plate will contain two heads. If you draw*

2559 Intended, probably, for "Elements of Zoology" was Bartram's skilled drawing of a Long-tailed Weasel, *Mustela frenata* (Figure 48).

2560 For example, jaws and teeth of mole, Barton papers, APS, may represent the intended plate.

as well as you engrave, I will send to N. York along with the drawings the Crania themselves, that you may be able to do the more justice to your work.[2561]

Walrus and dugong skulls were copied by Tiebout. Did the New York engraver comply?

Still hopeful and pursuing information, Barton turned once again to an early source of cooperation and information, to Peck, now a professor at Harvard College, recently returned from a trip to Europe, and active in the newly founded American Antiquarian Society.

24 January 1813

Dear Sir,

As I am printing an extensive work on the mammalia of the U. States, illustrated by fine engravings, I apply to you for such information as you may possess and have no unwillingness to communicate, relative to my plan. I shall gladly acknowledge every thing you may communicate. Did you not once inform me, that Mus amphibius of Linn.[2562] *is one of our native quadrupeds? Have you more than one species of Talpa,*[2563] *or more than one of Scalope?*[2564] *Have you any species of the genus Sorex?*[2565] *Can you possibly procure for me heads (crania) of the following animals, Histrix dorsata,*[2566] *Ursus Luscus,*[2567] *and the White Hare?*[2568] *I have actually printed off the whole history of the Pecora, and most of the true Ferae.*[2569] *What can you tell me concerning the moth which visits and proves so obstructive to the Bee-hives?*[2570] *Is it a new insect with you? Whenever your new (antiquarian) Society shall begin to publish, I shall send you at least one communication. I remain, Dear Sir, with very great regard, your friend, &c.*
B.S. Barton

2561 Barton papers, APS.

2562 *Mus amphibius*, "Europae, Africae, fossis, ripis, piscinis hortis," noted as "species mihi non rite cognita" (Linnaeus, *Systema Naturae, ed. 10*), 61, may have been intended here to be the muskrat, *Ondatra zibethicus* L., but see Samuel N. Rhoads, *A Reprint of the North American Zoology...to which is added an Appendix...* (Haddonfield, N.J., 1894), 16. [Linnaeus applied the epithet *amphibius* to the Eurasian rodent, *Arvicola terrestris* L., 1758, European Walter Vole. MSW.]

2563 Ord lists two moles: *Talpa longicaudata* and *T. rubra* in his account in William Guthrie, *A New Geographical, Historical, and Commercial Grammar; and Present State of the Several Kingdoms of the World* (Philadelphia, 1815, 2 vols.). [*Talpa* L. refers to Eurasian moles. The epithet *longicaudata* does refer in synonymy to the American Star-nosed Mole, *Condylura cristata* L. MSW.]

2564 "Scalope" may involve the Old World *Gazella dorcas* L., the gazelle, evidently once exhibited in Peale's Museum.

2565 *Sorex* is the most speciose (or common) of five genera for North American shrews.

2566 The American Porcupine, now *Erethizon dorsatum* L. See our Chapter XXV, Mammals.

2567 The Wolverine is now known as *Gulo gulo* L., 1758. MSW.

2568 "White hare" or "arctic hare" mentioned by Barton in notes for Pennant (Sterling, *Barton's Notes*, 37), where he questioned the true southern limit of the "varying hare" that had been reported from Sunbury, eight miles west of Philadelphia. Dr. Ashabel E. Paine, of Delaware Co., New York, delivered a snowshoe rabbit to Barton, noting, "I hope this Hare may live with thee to prove the changes of its Fur," 6 April 1809. [Several *Lepus* change color, among them the Snowshoe Hare, *Lepus americanus* Erxleben, 1777, and the Arctic Hare, *Lepus arcticus* Ross, 1819. MSW.]

2569 Wild animals.

2570 Barton read Jonathan William's paper on the beehive insect, *Phalaena tinea* L., before the APS 4 Dec. 1812. Now known as the Greater Wax Moth or Waxworm, *Galleria mellonella* L.

> *How many species of Caprimulgus have you?*[2571] *Please to inform Mr. Bigelow, that my edition of Mr. Cullen's mat. medica with large additions, is completed and published.*[2572]

If Peck replied, we know not.

Of Barton's plans for his "Zoology" Ord wrote in the introduction to Wilson's *American Ornithology*:

> *This work, which it was the intention of the late learned professor to entitle 'Elements of Zoology,' after being ten years in press was advanced no farther than fifty six pages, in octavo, at the death of the author. It does not appear that he left much manuscript matter in continuation, consequently the public will derive no benefit from a work which is too incomplete for publication. The printed sheets I have read, not only with satisfaction, but instruction; and cannot forbear expressing my regret that an undertaking, which Dr. Barton certainly knew how to perform, and to which his learning was adequate, should have been suffered to perish in embryo. The art of concentrating his talents was one for which the professor was not greatly distinguished.*[2573]

What happened to the proof-sheets? And the manuscript once in Ord's hands?

However, much of Barton's zoological knowledge appeared in print even though "Elements of Zoology" was never published. Birds were partly covered in *Fragments*; native dogs (1804; see Appendix I, Bibliography of Barton's Writings, no. 89); a summary of animals in his *Letter to Lacépède* (1805); the alligator (1805; no. 95); *Facts Relative to the Opossum* (1806); torpidity (1807; no. 152); *Account of Siren lacertina* (1808); usefulness of moles (1810; no. 155); "Tantalus" (1818; no. 171); his article in Brewster's *The American Edition of the New Edinburgh Encyclopedia* (Philadelphia, 1812); and his copious footnotes in Saint-Pierre's *Studies of Nature*. His founding the American Linnaean Society and his lecture to it, published as *Discourse* (1807) were basically a plea and a plan for encouraging contributions both in natural history and for financial backing. Many of his pupils as successful physicians would be going to newly settled areas, but even in the longer established, there would be a rich field of investigation. American readership was decidedly limited; costs of publication, artists, engravers, etc. were far more than he alone could bear. Once again he was doomed to failure in his plans for publication.

Oysters and "Vermes"

On 8 May 1788 Barton in Edinburgh had recorded in his manuscript Journal that oysters can be preserved on heaps of coal. "In the Firth of Forth especially opposite the coal-works of Lord Abercorn and Sir Archibald Hope when the strata of coal gradually descend to the Sea coast...oysters are dragged in the greatest quantities, and of remarkably fine quality."[2574] Oyster dealers in Scotland, having observed this, fatten oysters on crushed beds of coal sprinkled with salt and water.

2571 The distinction between the nightjars Chuck-will's Widow, *Caprimulgus carolinensis* J. F. Gmelin (1789), first described by Catesby, *Natural History*, and Whip-poor-will, *Caprimulgus vociferus* Wilson (1812), was blurred in *Fragments*, xi.

2572 Barton papers, APS.

2573 Reference here is to Alexander Wilson, *The American Ornithology*, ed. 2 (Philadelphia, 1809–1825) 9: clxvi. Also in Wilson and Bonaparte, enlarged ed. [1871] cv. fn.

2574 *PMPJ* 1 (1804) Pt. 1: 165, under "Miscellaneous Facts and Observations."

Living molluscs interested Barton little except for comparing them with fossil forms. Greenway on 14 September 1792, writing from Greenbrier, Virginia, sent "what few shells I can collect in this Part of the Country. I expected a promised present of some, but have not yet received it: as soon as they arrive, will send them." There are "a Highland Snail...A small conical Shell beautifully spiralled found on the Shore of James River...the Muscle of our Rivulets, Creeks & Branches, above Tide Water. This creature can travel along the Sandy Bottom on the edge of its Shell leaving a furrowed Track, by which I have followed them, several yards, and taken them up. Hogs feed on them, and are very industrious...The common Oister, as brought to us from the lower country. A kind of Cockle shell found amongst Oisters; one of the same Kind is amongst the Fossil Shells, dug out of the Well."[2575]

Like Linnaeus, Barton included in "Vermes" most invertebrates.

> *Of the great class of Vermes of Linnaeus, which may, I think, very properly be considered as an aggrigate of several distinct classes of animals, I have very little to say...because it is so immensely extensive; because it can only be investigated with much labour and attention...*
>
> *Owing to the great revolutions which our globe has undergone, there is an intimate, and even a necessary, connection between Geology and that part of Zoology, which for want of a better general name, I might denominate Elminthology. In other words, the images of the Vermes are so extensively impressed upon the materials of our former globe, that their history will ever go hand in hand with the studies of the geologist and mineralogist.*
>
> *...the laws and phenomena of life will be studied with great advantage by an attention to the class of Vermes;...particularly by physicians. It is the vermes which intermix, as it were, with the great series of vegetables; which lend their characters to the plants, which borrow characters from them to return...'Nature does not make sudden transitions,'...the truth and value of which are best perceived by the naturalist who has studied the life and the properties of the vast families of vermes, and the kingdom of plants.*
>
> *...Many of them enter, as it were, into the very composition of man, inhabiting our fluids, and taking possession of the cavities of our bodies. What fluid of the body is not the residence of myriads of vermes?* [mostly] *innocent companions in life...But...in the substance of some of our viscera, we find vermes whose history, by reason of the evils which they inflict upon man, it is important to study...vermes of the human alimentary canal. The evils which these occasion are, I believe, much greater than many physicians imagine. Unphilosophical and trifling is the notion that the vermes of the intestines are salutary intimates of our constitution...A patient of mine (an infant at the breast) discharged, when under the operation of powerful anthelmintic medicines, several individuals of that particular kind of worm which is called the Trichocephalus hominis: a worm which I have not, hitherto, heard mentioned as a native of the United States, though it is highly probable, that it is by no means uncommon among us.*[2576]

Insects

Just as "Dipus" and the "American Jerboa" caught Barton's particular interest among mammals, the Siren and Hellbender among amphibia, the rattlesnake among reptiles, so there

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2575 Barton papers, APS.

2576 *Discourse*, 37-39.

were the Honey bee, the Hessian Fly or "wheat insect," and such "pernicious insects" that concerned him. As early as 1768 the American Philosophical Society had created a committee when on 18 May, with David Rittenhouse presiding, an emergency action was taken to determine "whether any method can be fallen upon for preventing the damage done to wheat by the Hessian fly." The larvae of a gall midge, *Mayetiola destructor*, lodge between the stem and leaf sheath of the wheat plant, rasp the stem, and suck the plant juices. The stem is weakened and broken by the wind or destroyed. Grain yields are reduced, often severely. The Hessian Fly was first observed on Long Island in 1776[2577] and outbreaks were reported in New England journals through the years. There had been a particular outbreak in 1785, blamed on the Hessian troops employed by the British during the Revolution.

Thomas Jefferson on 12 May 1791 wrote an urgent letter to the committee, now composed of himself, Barton, James Hutchinson, and Caspar Wistar, requesting time to meet at Philosophical Hall at half after seven p.m. Friday. "He has conjectured that that hour the next day will be most convenient to them & that not a moment of their time may be lost unnecessarily, he will attend himself at that very moment precisely."[2578] He was to leave town on Sunday for a journey to New York and Long Island to study the infestations there, and wished particularly for Barton to have his queries ready for him to take. By 19 August a "short memoir on the Wheat insect" by Dr. Samuel Mitchill, then New York State legislator, was read before the Society with Jefferson and Barton present.[2579]

Barton had already written to William Bartram 22 April 1791:

> *I am one of a committee...to make inquiries into the history of the Hessian Fly: any information which you may chuse to communicate to me...I shall be happy to acknowledge. Is this animal at present about the city?—If it is, in what state is it found? Can you send me some of the eggs, or some of the chrysalids. Have you examined the animal? Is it a Musca or Fly: Do you recollect when it first made its appearance among us? Or do you think it was known in this country previously to the late revolution? Does it attack any part of the Wheat besides the stalk? Do you think it has ever been seen in the grain? Does it attack the Barley, the Oat, the Rye, or any other grasses? Anything on the subject will be acceptible.*[2580]

A broadside printed the following year listed nine questions, asking what year the insect was first observed, what wheat varieties were particularly attacked, what cold temperature it could withstand, etc., and copies were distributed. Dr. Wistar solicited help from Humphry Marshall.[2581] One copy was sent to Thomas Pennant, probably with Barton's zoological notes intended for Pennant's *Arctic Zoology Supplement*. The thrust of the directive was that "the best means of preventing or destroying the insect" meant knowing its "natural history" and that involved an understanding of its life cycle.

Withal the origin of the fly is still uncertain. It may have been, as Essig, *Entomology*, suggests, that during the War the adjective "Hessian" was applied to anything reprehensible or destructive. Peter Kalm had not recorded observation of it in 1750, and Rev. Jared Elliot[2582] had made no mention of it when writing about wheat growing in 1760. Some years were a

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2577 The year 1776 according to Matthew Cooke, *Injurious Insects of the Orchard, vineyards, Field...with Remedies for their Extermination* (Sacramento, 1883), 275, but 1779 according to Essig, *Entomology*, 826, and 1786 according to Weiss, *Entomology*, 41.

2578 See Betts, *Jefferson's Garden Book*, 163, for Jefferson's concern.

2579 APS "Minutes," 195. Sabin, *Dictionary*, 49749, cites Mitchill's writings.

2580 Bartram papers, Vol. 1, p. 10, HSP.

2581 Darlington, *Memorials*, 569.

2582 Rev. Jared Eliot (1685-1763), Connecticut clergyman and physician, author of the widely read *Essays upon Field Husbandry in New England*, Harry J. Carman & Rexford G. Turwell, eds. (New York, 1934).

disaster for the farmer. On 14 September 1792 James Greenway sent Barton from Dinwiddie County, Virginia, a specimen of *Cimex* or field bug, called here the Wheat Bug.

> *It is so destructive to the Wheat in the field, th*[at] *whole crops are destroyed by it. This year it has been very destructive, several crops are so much injured as not to produce more than the seed put into the ground. After the wheat is reaped, they fall upon the Indian corn, the stalks are blackened with their crowded numbers: the plants perish & die, exhausted of their juices by the poisonous proboscis of this insect.*[2583]

Little or no wheat was grown in 1794 according to the English traveler, Henry Wansey: rye and oats were substituted.[2584] The fly probably has an holarctic range, and although native in North America,[2585] increased unnoticed until waves of immigrants with their accompanying farm goods supplemented the movements of the troops.

Though popularly known during the Revolution, this gall midge was not described scientifically until 1817, when it was named *Cecidomyia destructor* by Thomas Say; it is now generally classified as a species of *Mayetiola*. The Hessian Fly hovered in literature through the century. Edward Claudius Herrick, bookstore clerk in New Haven, later librarian at Yale University, then treasurer, reviewed the insect for Silliman's *Journal*. He had begun investigating the pest in 1832, collaborating with James D. Dana, and published "A preliminary account" of the fly nine years later. Meanwhile he observed meteoric showers, and indeed was best known in his lifetime for his catalog of meteors and his interest in the aurora borealis. In 1841 he reported that nine-tenths of the eggs or pupae of the Hessian Fly are destroyed by four wasp parasites.[2586]

Concern over the depredations of insects continued in the States. Barton's interests were descriptive and theoretical rather than economic, but he was aware of the demands for "useful" information and discoveries in the natural sciences.

During 1800 the officers of the American Philosophical Society, Barton was then a curator, composed a "memoir" addressed to the Senate and House of Representatives of the Commonwealth of Pennsylvania seeking aid for the procuring of equipment under the Society's superintendence "for valuable improvements in agriculture and the several arts." Another memorial was sent to the United States Congress, then meeting in Philadelphia, and as a result small sums were offered, for example, in support of Michaux's western expedition.

The Society's publications were funded by the membership composed of men of modest means. For equipment and books the Society depended largely on gifts. Barton had invested in his considerable library, shared with his pupils and friends, essential for his writing. More fortunate, Barton's friend, William Dandridge Peck of Massachusetts, had received financial support. In 1795 he won a prize of fifty dollars for his essay on the Canker Worm, naming it *Phalaena vernata* Peck, and in 1799 he won fifty dollars and a gold medal for his paper on the natural history of the slug worm.

A fund had operated since 1786 within the American Philosophical Society, albeit spasmodically, designed to advance such economic needs of the country as insect control. Little noticed in the history of American science has been the Megallanic Premium. The donor was Jean Hyacinthe de Magellan (1722–1790),[2587] native of Portugal, chemist-physicist, friend of Priestley, who resided the last 26 years of his life in England. Magellan had been

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2583 Barton papers, APS.

2584 Jeremy, *Wansey*, 91.

2585 Barton, *Discourse*, 39, declared Hessian Fly "peculiar to America."

2586 Edward C. Herrick, *Amer. J. Sci.* 41 (1841): 153–158.

2587 Name rendered also John Hyacinthe de Magellan. See Schofield, *Priestley*. Stuart Pierson, *DSB*, does not mention the Magellanic Premium. P. P. Calvert, entomologist of the University of Pennsylvania, had inquired about the history of the Magellanic Medal in 1899, evidently without success.

elected a member of the American Philosophical Society in 1784. He specified that his gift of two hundred guineas be invested and a gold medal valued at ten guineas be awarded annually for the best discovery or information concerning "useful knowledge" but excluding mere natural history. In 1790 Francis Hopkinson was awarded the medal for invention of the "spring block" and in 1794 Nicholas Collin, for a fire-escape elevator design. From 1798 to 1803 no awards were made, and at the meeting of the Society of 19 October 1804 the funds were recalculated and a balance of $1,522.83 remained.[2588] Over the years Barton had longed for financial assistance in support of his projected works, but since they fell under the medal's "natural history" limitation, he had been ineligible.

At a meeting of the Society on 16 November 1804 two papers for the Magellanic Medal were read from sealed envelopes containing an identifying code. One was a "Table, etc. to a useful improvement in navigations and surveying," and the second "On a number of pernicious insects of the United States."[2589] During the business meeting 21 December 1804, it was decided that the eulogy for Priestley would be given by Barton at the First Presbyterian Church on Market Street. Then came the balloting on the Megallanic Premium. Unanimously judged first was the essay on pernicious insects. On the opening of the sealed letter the winner turned out to be none other than Dr. Benjamin Smith Barton,[2590] and he was awarded the medal. But about a month later at the Society's meeting of 18 January, Barton's essay "was returned for alterations desired by the author."[2591]

In his desire to enlarge and improve his essay, and indicative of the persistent concern about harmful insects, Barton wrote to a former pupil, Dr. Henry M. Gray. Gray forwarded an answer from his brother, an embattled farmer who wrote Henry concerning the chinch bug, *Blissus leucopterus*, and the "blue-bug" in Southampton, southern Virginia, 2 April 1810:

> *I am very little acquainted with the Insects you wish to be informed of that are destructive to the Indian Corn, particularly the Chintz—as this species of Insects seldom infest our fields in this part of the World. I have not for my own part ever seen any of thim, tho' I have enquired if any have ever been Injurious to the crops hereabouts. I have been told that such bugs were some years ago (perhaps eighteen or twenty) in vast numbers among the Wheat and after the harvest was over they made their way into the corn fields where they committed great havock.—They fortunately did not continue in the[se] parts but a few seasons and departure (or extinction) was in a considerable degree attributed to the relinquishment of the wheat Crop in which it was supposed they originated, and by burning the stubble and grass contiguous to the fields—they are described to me as being black bugs with a red spot about the anus and of a disagreeable smell, going in immense quantities so as nearly to cover the stalks of the corn which they soon exhausted of its juices and it soon dried up.—The Blue bug as it is called I am something better acquainted with having suffered sufficiently from their devastation—They ought now properly to be called lice if those are properly so called which infest the Cabbages being very nearly like them in colour size and conformation of body & habits save that the one takes its above ground—the blue bug on the contrary take post among the roots of the Corn which are very Juicy & tender & there in*

2588 Magellanic Premium rules given in APS "Minutes," 138. Invitation to apply for the Premium in *Philadelphia Med. Mus.* 1(1805): 44.

2589 APS "Minutes," 365. The essay's motto is from Psalm 105 "the locusts came, and young locusts without number; which devoured all the vegetation in their land, and ate up the fruit of their ground."

2590 APS "Minutes," 369.

2591 APS "Minutes," 370.

secret strikes at its existence by sucking away its nutriment, and those unacquainted with the noxious little thieves are surprized to see the corn twisting up its leaves and in a little time dying entirely—they most commonly infest the corn which is cultivated on lands that have been tended too long without resting it or suffiring it to lay fallow—in lands of strength they do not cause much inconvenience if the seasons are favourable for the Corn either gets a sufficient store of Juices to acctivate its vegetation and support them or they are destroyed by the moisture—they are very destructive in the dry seasons & on the weaker lands.

The Bud worm does not do much Injury to the production of the grain but they destroy in some measure the blades—they most commonly begin their depredations before the tassel or Ear is formed, & when the corn is in its most tender state after Jointing, when it is about waist high, by cut[t]ing, or eating through the whole of the blades which at this stage of its growth are wrapt up in a bushy top and extreamly tender and sweet—they are something like the silk worm in form tho' I do not remember to have seen any larger than about an inch or Inch & half in length & of the size of a small goose quill—what becomes of them I cannot pretend to say or of the blue bug—or from whince the[y] derive their origin—...

I remain Your Affectionate Brother Thomas Gray

You will perceive this letter is longer geting forward than I intented in consequence of the difficulty to procure notes which I have but Just now obtained in Suffolk—[2592]

The obvious need for more information effectively postponed publication of Barton's Magellanic essay on pernicious insects, hoping as he was to add further information. In 1805 he published a letter dated 28 November 1803 from William Mason Walmsley of Bayberry, Pennsylvania, "Observations relative to the Wheat-Moth of Pennsylvania, and other parts of the U.S." in his newly launched *Philadelphia Medical and Physical Journal*.[2593] In added "Notes" Barton mentioned his intention to offer "a more circumstantial account, in another place," probably in his "Memoir on a number of pernicious Insects." He added in characteristic manner that he is "anxious to render that memoir as perfect as he can...It is important, that it should be communicated to the public." His information also had come from his farmer-brother Richard Peters Barton, from the Bartram brothers, and perhaps from a recent book to which the farmer-physician James Mease had added his notes.[2594]

Barton did not consider prevention or cure. The sixteen troublesome economic insects that Barton considered in his loosely organized commentary in his "Notes" included a species of Cimex, "very destructive to wheat" etc.; a Phalaena, "Bud Worm"; "Grass-Caterpillar"; two species of "Bruchus," one the "Pea-Bug";[2595] "Potatoe-Fly (*Lytta vittata* of Fabricius)...so beneficially employed as a substitute for the cantharides of the shops";[2596] "different species of Phalaenae, the larvae of which destroy the leaves, &c. of the common apple tree, the Crab-apple (*Pyrus coronaria*[2597]), the Wild-cherry tree (e.g., *Prunus virginiana*), etc"; "different species of Curculio, or Weavel" [Weevil]; "the *Zygaena persica*,[2598] and other insects, which

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2592 Barton papers, APS.

2593 *PMPJ* 1 (1805) pt. 2: 119–126. Barton's notes follow on 127–131. W. M. Walmsley, brother of a favorite pupil.

2594 A. F. M. Willick, M.D., *The Domestic Encyclopaedia; or, A Dictionary of Facts and Useful Knowledge...Rural and Domestic Economy...* (Philadelphia, 1803) with James Mease's notes.

2595 Also called "Pea Fly," *Bruchus pisi* Fabricius. Snetsinger, *Melsheimer*, 36.

2596 Snetsinger, *Melsheimer*, 79. See fn. 44, *Lytta cinerea*. [Potato Beetle, *Epicauta vittata* Fabricius, 1775. ITIS.]

2597 [*Malus coronaria* (L.) Mill. This crabapple species was moved from *Pyrus* in 1768.]

2598 The earliest naming of the peach-tree borer, without reference to its taxonomic position, is in *PMPJ* 1(1805): 129. Thomas Say named the borer *Aegeria exitiosa*; the present name is *Synanthedon exitiosa* Say. ZOOBANK.]

prove destructive to the roots, and branches of the peach-tree." Where Barton found this last name, or whether it was his own has remained a puzzle, and if his own it is unfortunate he did not give it a Latin description. Barton then continued with "the Periodical Locust (*Magicicada septendecim*), of which some account is given in the First part of this Journal. In [that] *memoir*, however, the author [John Bartram Sr.] has confined himself principally to an account of the injuries inflected by this insect, and the means of preventing these injuries."[2599]

Then followed "Crioceris Cucumeris, or Cucumber-Fly";[2600] "perhaps the Cimex haemorrhous of Linnaeus" ravaging particularly the vines of squash and pumpkin; "Coccinella or May-Bug" [Beetle]; "*Melolontha multivora*, Rose-Bug," a genus listed by Melsheimer,[2601] the species name was Barton's but invalid without a description. He concluded with the "Tobacco Worm," and "Gryllus" on indigo and potato. These very general notes and a promise were as far as Barton progressed with insects. Other subjects held a greater charm.

One aid to Barton may have been the insect collection in Peale's Museum, where by 1804 Peale exhibited "in one alcove 4,000 insects." He had become knowledgeable in classification, perhaps with some direction from Barton and Barton's copy of Linnaeus's *Systema*. After being removed to the State House in 1810 the exhibits were newly arranged and "Keyed to a general label by number."[2602] An intimation of the kind of detail that Peale offered may be seen in a scrap of manuscript preserved among the Barton papers on the [Horse] Bot Fly, which, Peale says, "I take the liberty to call Oestrus equus," and of the Wheat Fly [*Mayetiola destructor*]. "This is a very destructive insect to wheat doing great damage in some places," but he offered no remedy for it.

Although Peale served as a curator for the American Philosophical Society from 1788-1809, and, from these manuscript bits, might seem better qualified than Barton to gather and contribute information on pernicious insects, it was Barton who submitted the paper on these insects. Peale in good will had given lists to Barton. One undated fragment in Peale's handwriting shows the intensity of his interest. It is a summary of his specimens.

After William Mason Walmsley's article on the wheat moth, his brother, Thomas, contributed on "Lampyris, or fireflies," on which he had experimented and had concluded the light was phosphorescence.[2603] Dr. Calvin Jones of Raleigh, North Carolina, contributed "Observations on locusts," to which Barton added his own.[2604] Dr. John B. Davidge of Baltimore referred to caterpillars as reptiles in his "Experiments and observations on the caterpillar which infects the Lombardy poplar." He declared them to be poisonous.[2605] Dr. Edward Cutbush (1772-1843)[2606] sent in a translation of a paper by Signor Paroletti [*sic*, Paoletti] of Turin Academy on the prevention and cure of certain diseases of the Silk Worm. He had been impressed with the suggestion that oxygenated muriatic gas was useful for cleansing the rooms in which they were raised, and in curing diseases. Dr. Cutbush, who had taken his degree from the University of Pennsylvania in 1794 and had been serving in the navy, followed with a paper on the opening of buboes.

In later years Barton's sections in his *Philadelphia Medical and Physical Journal* entitled "Miscellaneous Facts and Observations" contained notes on insects. For examples, Supplement I (1806) reported that a "Phalaena moth (Bombys)" attacks the Lombardy poplar,

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2599 See *PMPJ* suppl. 2 (1807): 181-187 and fn. 39.

2600 Snetsinger, *Melsheimer*, 49. [*Crioceris* Mueller, 1764, Coleoptera, Chrysomelid Beetle. ZOOBANK.]

2601 Snetsinger, *Melsheimer*, 28-29. [*Cimex* L., 1758, Cimicidae, Bed Bug. *Melolantha* Geoffrey, 1762, with *M. melolantha* L., 1758, a scarab beetle or Rose Chafer. Oestrus equi Clark, 1797, invalid synonym for *Gasterophilus intestinalis* De Geer, 1776, Horse Bot Fly. ITIS. ZOOBANK.]

2602 Sellers, *Peale's Museum*, 162 and 210.

2603 Snetsinger, *Melsheimer*, 63-64, lists 15 names under *Lampyris* L. The topic is discussed by E. Newton Harvey, *Bioluminescense* (New York, 1952). North American Fireflies such as *Photinus pyralis* L. also belong to Lampyridae.

2604 *PMPJ* 2 (1806) pt. 2: 90-99.

2605 *PMPJ* 2 (1807) suppl. I: 139-157.

2606 Austin, *Imprints*, no. 612.

and that in Europe it has a greater range, attacking *Salix*. He reported that Peck had found the Sphinx Moth destructive of the Black Locust *Robinia pseudoacacia*. "*Elater noctilucus*" found on the streets of Philadelphia had been figured by Dr. Patrick Browne (1720–1790) in *The Civil and Natural History of Jamaica in Three Parts* (London, 1756), 1: 70–71, and called "*Elator major fuscus phosphoricus*." A native of Jamaica, it had probably come in with mahogany, said Barton. There were also notes entered into his Commonplace Journal: tobacco was "subject to three insects: the worm (caterpillar of Sphinx Moth),[2607] grub and fly (very small, not bigger than a pin head, coleopterous insect eats young plant)," an observation he made himself.

In 1806 appeared the first book on insects published in America, a *Catalogue of the Insects of Pennsylvania, part first* (Hanover, Pa., 1806).[2608] Its author, "minister of the gospel," Friedrick Valentine Melsheimer (1749–1814), born in the Duchy of Brunswick, was chaplain of the Dragoon Regiment of Brunswick Auxiliaries hired by the British during the War for Independence.[2609] He was one of a party of German officers quartered at Bethlehem, Pennsylvania, was exchanged for an American prisoner, married, and eventually received into the Lutheran ministry in 1785. From 1787 until 1789 he served as professor of Greek, Latin, and German in Franklin College, when Rev. Henry Muhlenberg was president, then become pastor at St. Matthew's in Hanover, where he served until his death.

The sixty-page *Catalogue*, arranged according to the scheme of Fabricius, lists 1363 beetles by name with a few brief footnotes on food habits and modes of occurrence. Melsheimer collected for his friend August Wilhelm Knoch (1742–1818) in Brunswick, who provided identifications. Melsheimer's collections and correspondence are at the Museum of Comparative Zoology, Harvard. E. A. Schwarz identified some 400 of his specimens.[2610] Melsheimer also contributed articles on Pennsylvania to *Schleswig'sche Journal* in 1792 and 1794. Barton referred to Melsheimer's contribution in his *Letter to M. Lacépède* where he wrote: "entomology...has several votaries...Melscheimer...employs a portion of his time in the cultivation of this science, which has always been deemed favourable to religion. [He] has discovered several hundred new species of American insects, a catalogue and description of which, may, perhaps, be published. I must still regret, however, that it is chiefly the nomenclature of North American insects that is attended to." Barton saw the manuscript before its publication, probably on a visit.

In 1812 Muhlenberg wrote to Peck that "Our greatest Entomologist in Pennsylvania is Revd. Valentime Melsheimer at Hanover. He has published a Catalogue of the Coleoptera of his Collection. If you wish to see it, You are exceedingly wellcome to my copy, and indeed to anything I have in the way of natural history, only mention a House in Boston where I may address my Packets with Safety by ship. Letters may go by mail."[2611] Muhlenberg also suggested Stephen Elliott and William Baldwin as "good correspondents who are also good Entomologists."

In his *Discourse* Barton summed up his attitude toward the study of insects. "Entomology is by no means the least important department of Zoology. For in the Class of Insects are arranged some of the greatest enemies to the labours and industry of man...more difficult to subdue are the small insects which lay waste our fields, our gardens, our forests, than the largest and most ferocious quadrupeds."[2612] Although "considerable progress has been made in collecting, in naming, and in marking by *external* characteristics," and there he referred to Melsheimer's catalog, "it is an object of first importance to investigate the natural history," especially of pernicious insects.

Barton also excused himself for giving his readers "miscellaneous fragments, which my numerous avocations have prevented me from digesting into better and more seemly order."

2607 Snetsinger, *Melsheimer*, lists 80 names under *Elater*, 66–69. [Sphinx Moth, Sphingidae.]

2608 According to Snetsinger, *Melsheimer*, only 16 copies of Melsheimer were located in 1976.

2609 G. H. Genzmer in *DAB*. Weiss, *Entomology*, 64–66, for additional references to Snetsinger's account.

2610 *Entomol. Soc. Washington* 3(3) (1895): 134.

2611 Archives, Linnean Society, London.

2612 *Discourse*, 33.

His successors, he believed, would have greater opportunities than he to concentrate on the sciences. He had sent insects to Fabricius[2613] instead of giving American names and descriptions himself, despite his stated chagrin that Europeans were getting credit for discovery of American objects.

In Note G in Appendix to his *Discourse* he refers to his "Essay on pernicious insects," which he says will be published in the Society's *Transactions* and will include not only the natural history but also "the means of preventing and of curing the evils which they inflect."[2614] Since neither he, nor any of his correspondents after three years, were able satisfactorily to prevent and cure the ravages of pernicious insects, he had not and did not submit his paper for publication.

Barton commented, "Let us not, however, complain of the insects as if none of them were *useful* to us." When he made the suggestion that "some of these very insects...in all probability are, highly beneficial to us, by destroying the *exuberant* growth of a country" he may have had weed fields in mind. Alas, he did not notice the role of insects in cross-pollination! His extended argument on the discovery of "a more powerful vesicatory" among our native beetles is no longer noticed in medical circles.[2615] He then moved to his fondness for life histories, and singled out the "history [of Periodical Cicada, e.g., *Magicicada septendecim*], one of the most singular of life."[2616]

Among some of Barton's colleagues, his interest in bugs, seeds, and queer things was, on occasion, the butt for a good laugh, as when he "had been about taking the pulses of Indians." On another occasion Dr. John Syng Dorsey (1783–1818), who succeeded Barton in the Chair of Materia Medica, recalled years later that William Maclure, sent to Paris by Jefferson in 1803, was given a box of insects by Barton to deliver to Fabricius.

> *McClure took great care of the box; and calling upon the savant, he was ushered into the presence of several literati, convened for the occasion. They were all eager to see the contents of the box...No sooner had he removed the lid than the box fell from his hand. He coolly thanked Mr. McClure for his attention to the doctor's commands, but thought his countryman might have sent him something else than a potato-fly!*[2617]

What may have been a common weed species to Fabricius was to Barton a singular treasure distinguished from the European Potato Beetle so seldom seen in the eastern United States. Had a letter from Barton explained the need for an identification? On 20 December 1805 a "Catalogue of Captain Lewis' donations" had been reported to the American Philosophical Society meeting, and the insects and two small animals were referred to Dr. Barton. Was one of the insects the Colorado Potato Beetle[2618] picked off the native Buffalobean *Solanum rostratum* somewhere on the western plains? After the introduction of the white potato into the West, the beetle moved over in numbers to the cultivated crop.

It may, on the other hand, have been a cantharides or "Spanish Fly," a recently discovered blister beetle, possibly the *Lytta cinerea* that Fabricius may have named and described from a specimen of Melsheimer.[2619] Melsheimer had discovered its properties just about the same time as Isaac Chapman, who published "An account of a species of Cantharis, found in Bucks County, Pennsylvania, including observations on its medical properties."[2620]

2613 Fabricius described some 10,000 insects; his principal collections are at the Zoological Museum, Copenhagen.

2614 *Discourse*, 81.

2615 *Discourse*, 35. See fn. 44.

2616 The Seventeen Year Cicada, first described by Linnaeus as *Cicada septendecim*.

2617 Gross, *Med. Biog.*, 148–149.

2618 APS "Minutes," 380. [*Leptinotarsa decemlineata*.]

2619 Snetsinger, *Melsheimer*, 49. [Spanish Fly, *Lytta vesicatoria* L., 1758.]

2620 *Med. Repos.* 2 (1798): 174–177.

Both had been discoveries when the beetle was accidently crushed on bare skin. Chapman had found his beetle smaller than the "Spanish Fly," *Melae vesicatorium* of Europe.[2621] Since blister beetles were still considered useful in medical treatment, to Barton it may have been an American treasure, but to Fabricius, having already studied it, it was no novelty, and so a disappointment. Cantharides became a subject for a dissertation by J. P. Gough, pupil of both Rush and Barton. Another pupil, Charles Giguilliat, reported from Savannah in 1813 that he had tried it unsuccessfully for diabetes![2622] In his edition of Cullen's *Treatise*, Barton wrote "I have myself not unfrequently observed the effects of cantharides for diuretic uses."[2623]

Continuing to collect information, Barton solicited material from Edward Johnson,[2624] who wrote 4 November 1807 from Powhatan Court House, Virginia, his letter favored by Mr. [Richard] Tovall, that "people of this [James River] part of Virginia" have "little taste for natural history." Johnson then described a caterpillar infesting Indian corn, and told him of the recent arrival from Europe of W. J. Cobble,[2625] who had been collecting lepidopterous insects.

A note by Barton:

> *Concerning Bartram's Garden. June 4, 1808. In Bartram's garden, I observed very great numbers of the Rose-bug,*[2626] *which W. B. said, are likely to become the most pernicious insect in the country. He says, they are, greatly increasing at this time, very destructive to the peaches, eating as indeed I observed, the fruits though it be now near half grown. He says, they eat this fruit to the very stone.*[2627]

Jeremy Belknap had raised the question "whether the Honeybee is a native of America?"[2628] He was refuting Jefferson's assertion that the honeybee was not a native of our continent.[2629] Even though the Indian called the honeybee the "White man's fly" and their presence delimited the Europeans' settlements, it was Belknap asserted, a native of America but also imported from Europe especially into Virginia and New England. Barton promptly took up the question with a characteristic review of the writings of Columbus, Purchas, Acosta, Lionel Wafer, and others, along with linguistic evidence. Barton concluded with Jefferson that the honeybee (*Apis mellifera*) had been introduced.[2630] He noted that since a number of plants had come from Europe, the rat, mouse, clothes moths, fleas and bedbugs, so had the honeybee. William Bartram had noticed honeybees in East Florida, but not in West Florida. Peter Kalm had also reported that the Indians had not known them, but called them English flies.[2631]

A teleological[2632] fantasy had been indulged in by Saint-Pierre when he wrote:

2621 Cloudsley-Thompson, *Insects*, 204, on the Spanish Fly, *Lytta vesicatoria* L., 1758, or blister beetle, the cantharidin prepared from the elytra used as an aphrodisiac before its dangerous nature was appreciated.

2622 Charles Giguilliat, 23 Nov. 1813. Barton papers, APS.

2623 Barton, *Cullin's Treatise*, 2: 394.

2624 Not identified.

2625 Surely W. H. Cabell is meant.

2626 Rose chafer, *Macrodactylus subspinosus* Fabricius, 1775, occurs from the Atlantic states to Colorado, feeding on garden flowers, grape leaves, and other flowers.

2627 Barton papers, APS.

2628 Jeremy Belknap, *A Discourse intended to commemorate the Discovery of America by Christopher Columbus...* (Boston, 1792), 117–124.

2629 Jefferson, *Notes*, 71. Though Banister had compiled a "Colectio insectorum" by 1680 and left extensive notes on insects, he did not comment on the nativity of the honeybee (Ewan & Ewan, *Banister*, 272–307).

2630 Barton published "An inquiry into the subject" *Trans. Amer. Philos. Soc.* 3 (1793): 241–261. Weiss, *Entomology*, 43, noticed Barton's interest.

2631 Benson, *Kalm*, 151.

2632 [Teleology (Greek *telos*, "end"; *logos*, "discourse"), in philosophy, the science or doctrine that attempts to explain the universe in terms of ends or final causes.]

> *...the thorns upon the trees afford protection even to the insects. Bees there carry on their honey-making processes in the aged trunks of prickly trees hallowed by the hand of Time. It is very remarkable that Nature, who has provided this resource for the bees of America, has withheld from them a sting, as if those on the trees were sufficient for their defence. I believe that to this reason it may be ascribed, though no attention has been paid to it, that we have never hitherto been able to rear in the Antilles Islands the honey-bees of the country. They refused no doubt to take up their abode in domestic hives, because they did not consider themselves as there in a state of security; but might perhaps have been induced to make that choice, had the hives to which they were invited been decorated and defended by thorns.*[2633]

To this Barton replied in a footnote to the Philadelphia reprint:

> *I have shown, in an express memoir on the subject, that the common honey-bee, (Apis mellifica), is not a native of America. So far I agree with Saint-Pierre: and I agree with him, also, that nature has withheld from several of the native honey-making species a sting. But on the other hand, it is certain that South America at least, produced some species of honey-bees with stings. As to what our author has said of the attachment of the defenceless species of bees to prickly trees, &c.; it is an assertion, or hypothesis, which can demand no serious notice.*[2634]

A related topic was also discussed with William Bartram, and the result was Barton's memoir of 1802, "Some account of the poisonous and injurious honey of North America," which "bristles with references and footnotes."[2635] It includes notes on the poisoning, color of the presumed poisonous honey, and what relation, if any, might obtain to the flowers visited. Ericacious flowers, particularly mountain laurel and sheep-kill, were known to render the honey intoxicating. Of the chemical differences between honey and sugar Barton wrote, "What these properties are we do not always know. But we are certain, that there often adheres to honey, a narcotic or deleterious power, very similar to that of the plants from which such honey has been obtained."[2636]

On 4 December 1812 Barton read a paper by Jonathan Williams before the Society, to which he added commentary. This was on the beehive pest, the Greater Wax Moth *Phalaena tinea*. He then wrote Peck, 24 January 1813, to inquire what he knew of the moth's destructiveness to hives. Heckewelder had written to Barton from Bethlehem 27 January 1804 that "It is thought by some People in this Neighborhood, that the Caterpillar or Fly, so injurious to Beehives, are on the decrease—also the insect which destroys the Morellow Cherry tree is diminishing—Another Year may decide this fact."[2637]

William Bartram had noticed several species of Robber Flies, *Asilus*, on Flint River in Georgia.[2638] Barton had also talked over the appearances of insects; related a few of them to appearances of birds and the progress of vegetation in the spring. For his observations made in 1791 and published as *Fragments*, examples are:

2633 Barton, *Studies of Nature*.

2634 Barton, *Studies of Nature*, 2: 150. *Apis mellifica*, surely a typographic error for *A. mellifera* L.

2635 Weiss, *Entomology*, 43.

2636 Barton, *Cullen's Treatise*, 2: 284–285.

2637 Barton papers, APS.

2638 Bartram, *Travels*, 384–386.

April 28...A species of Scarabaeus, called the Spring-Beetle, now appears. In the evening, millions of them swarm over orchards and forests, performing their amours. They occasion, at this time, a noise not unlike distant thunder. It is a reddish brown Beetle, ¼ of an inch in length, and of proportional thickness.

April 30...Various species of Libellula, Papilio, Formica,[2639] *and other insects, appear in abundance. The Hermit (Apis–), or Borer,*[2640] *comes forth from its cell. Thermometer, 52½, in the morning: 67½ in the afternoon. Barometer, 29.8–Cloudy. May 1...The Glow-Worm*[2641] *(Lampyris noctiluca? the Female) begins to sparkle in the grass, in humid situations, in the evening.*

15 May...[Of the Cucumber Fly] *nothing has been found so beneficial as a mixture of tobacco and capsicum (Red-pepper) sprinkled over the vines.*

10 November...The Nocturnal insects are hardly heard any more. They are either destroyed by the chilling frosts, or have retired to their winter-quarters. Some species of [Cricket] *Gryllus are still heard to utter a feeble noise in the warmer evenings.*

Sometime before 1809 Barton learned of the London-born artist, John Abbot (1751-1840) who was living in Bullock County, Georgia, who would supply insect drawings similar to those produced in his *Rarer Lepidopterous Insects of Georgia.*[2642] Barton had acquired a copy and perhaps learned of Abbot's whereabouts either from Smith or from Aloysius Enslen, who had been botanizing in Georgia. Though shy and retiring, Abbot had imported a detailed knowledge of insects gained from his London associates. He spent "over sixty years happily roaming the woodlands and fields of Georgia," sending specimens, paintings of the different phases of life history of moths, butterflies and spiders, the plants they were found on, and essential data. He also painted and collected birds.[2643] Smith had acquired Abbot paintings from John Fancillon, Abbot's London agent, to whom Abbot had instructed "prune and trim what you please of the following rude notes," adding he had not tried to describe the insects "in any scientific manner." Although Stephen Elliott confided to Muhlenberg that Abbot was "a man of no Science," the contemporary British ornithologist John Latham in print considered Abbot an excellent observer. Dr. James Macbride of Charleston wrote Elliott, discussing the milkweed *Asclepias obtusifolia*, first drawn by Abbot and described by Smith as *A. amplexicaulis* [the Clasping Milkweed]. MacBride wrote that

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2639 "Species of" dragonflies, butterflies, ants, "and other insects."

2640 The "borer," a buprestid beetle, overwinters in the sapwood.

2641 Larva and adult females of larval shape of the North American Firefly, *Photinus pyralis* L. *Lampyris noctiluca* L., 1758, is the European Glow Worm.

2642 *The Natural History of the Rarer Lepidopterous Insects of Georgia...collected from the observations of Mr. John Abbot...*by James Edward Smith (London, 1797, 2 vols., 104 plates). Fully documented by Vivian Rogers-Price, *John Abbot in Georgia: the vision of a naturalist* (Madison, Ga., 1983); J. Ewan, *Bartonia* 51 (1985): 37-45; Marcus B. Simpson, *North Carolina Hist. Rev.* 61 (1984): 347-390; R. S. Wilkinson, *Entomol. Rec.* 15 (1984): 110-123, 165-176, 222-229, and 273-285.

2643 Rogers-Price, *John Abbot in Georgia: the vision of a naturalist* (Madison, Ga., 1983), 48, "1798": 107 spider watercolors with written observations, purchased in 1821 by Charles Athanase Walckenaer (1771-1852) and used in his *Histoire Naturelle des Insectes: Aptéres* (Paris, 1837-1847); Theodore H. Savory, *Spiders, Men, and Scorpions, being a Natural History of Arachnology* (London, 1961), 71-72, mentions a volume of 116 pages of text and illustrations, and Abbot's notebook of 42 pages, "Notes and Observations on the Drawings of the Spiders of Georgia," 1792, at the Natural History Museum, London.

"Dr. Barton told me that other Asclepiades caught insects."[2644] The intricate flower with a loop of pollinia operate as a sort of loose snare detaining but not trapping the visiting insect.[2645]

According to Abbot, Barton had written "several letters"—none have been located—to him and to his agent and friend Augustus Oemler.[2646] As librarian, Oemler purchased Abbot drawings at one dollar each for the Savannah Library. Abbot wrote 18 April 1813 to a Swiss customer, Heinrich Escher-Zollikofer (1776-1853)[2647] visiting Philadelphia, that Barton was "seeming very desirous to contract with me to make him a number of Drawings. I sent him an Answer thro' the favor of Mr. Wilson.[2648] He told him he would write to me Tomorrow but Tomorrow is not yet come." Then he added "I am much obliged to [Barton] to recommend me to you, as you mention in your letter."

In 1812 Abbot had sent a note and a roll of three drawings to the care of Wilson for Barton. Neither the note nor the drawings have been located. Nor is it known whether the drawings were of birds or insects. The War of 1812 persuaded Abbot to retire from painting until his friends Oemler and LeConte persuaded him to resume his natural history activities the following year. Barton was soon to accept his new position as Professor of the Theory and Practice of Medicine, and so to neglect natural history.

2644 MacBride to Elliott, 7 Mar. 1812. Elliott correspondence, AA. Favor of George Rogers.

2645 Interactions between insect and milkweed flowers reported by T. H. Carry; see Lloyd, *Carnivorous Plants*, 8. [Rather than carnivory, the relationship is now understood as one of complex flowers and their pollinating insects.]

2646 Augustus Gottleib Oemler (1770-1852), b. Hettstedt, Germany, son of a Lutheran minister, came to America about 1788, became a Savannah pharmacist, librarian, and Sea Island cotton grower. He delivered Barton's letter of 1 May 1811 to Jefferson at Monticello on a return trip from Philadelphia to Savannah. Otherwise no contacts between Oemler and Barton have been noticed (Robert P. Dow, *J. New York Entomol. Soc.* 22 (1914): 70).

2647 "To Henry Escher, care of Mr. L. G. Krumbhaar, Philadelphia," Cornell University Archives.

2648 Alexander Wilson visited Savannah during the spring and summer of 1809 (Hunter, *Wilson*, 86-88). Oemler was either a subscriber or a recipient of Wilson's *American Ornithology*; see *Auk* 26 (1906): 365.

Chapter XXIII

Amphibians, Reptiles, and Fishes

"Nature intends to reveal to us many things (precious in their kinds), which are now entirely unknown to us. Physiology will, in time, assume one of the highest stations in the range of sure as well as splendid sciences."
—Barton to Zimmermann on the Rattlesnake, *Philos. Mag.* 15 (1803): 300

Amphibians

The "Amphibia" of Linnaeus was an *omnium gatherum*; *Systema Naturae*, ed. 10, included under the class such diverse vertebrates as crocodiles, snakes, lizards, and turtles, as well as the frogs and salamanders we associate with the class today. The serpent genus *Coluber* included 360 epithets—the term "species" is hardly applicable considering the composite nature of some of the Linnaean propositions—and *Lacerta*, with 43 names, included lizards now classified in several genera. Barton described the horned lizard of the Rocky Mountains as *Lacerta tapajaxin*.[2649]

His difficulty in providing descriptions of the amphibians he knew, or sent to him by correspondents, was due in large part to the confused taxonomy of the tailed amphibia, now classified in several genera. The history of amphibian nomenclature in Barton's lifetime was summarized by E. D. Cope in 1889, with eight zoologists (Lacépède, Brongniart, Latrielle, Daudin, Lamarck, Cuvier, and Oppel) offering various dispositions between 1788 and 1811.[2650]

Barton described in print, or discussed in his manuscript notes, five different salamanders that belong to the two groups recognized by zoologists. These were:

1. Adults without persistent gills:
   Spotted Salamander, *Ambystoma maculatum*
   (Synonyms *Lacerta maculata*; *Salamandra venenosa*; *L. subviolacea*
   Three-toed Amphiuma, or Congo eel, *Amphiuma tridactylum*
   (Synonym *Syren quadrapeda* Custis, 1807)
   Hellbender, *Cryptobranchus alleganiensis*
   (Synonyms *Salamandra alleganiensis*; *Salamandra gigantea*; *S. horrida*, *S. maxima*)

2. Adult with persistent feathery branched external gills; Greater Siren, *Siren lacertina*
   (Synonyms *Syren lacertina*; *Muraena siren*)
   Mud Puppy, Water Dog, Proteus, *Necturus maculosus*
   (Synonyms *Siren maculosa*; *Necturus maculata*; *Proteus tetradactylus*.

2649 [Now recognized as *Phrynosoma cornutum* Harlan. RA.]

2650 Edward Drinker Cope, *The Batrachia of North America* (Washington, D.C., 1889).

Ambystoma maculatum, Spotted Salamander

On 15 April 1803 Barton exhibited at a meeting of the American Philosophical Society a live Spotted salamander, and read a paper on a "New species of American lizard," illustrated with an accompanying drawing.[2651]

Barton believed that his salamander differed from the Spotted salamander, *Lacerta punctata* of Linnaeus.[2652]

> *I beg leave, therefore, to name it Lacerta subviolacea, and would thus describe it for the benefit of systematic writers, who often prefer a short description (ever liable, where the species of a family are numerous to mislead) to one more minute and extensive: Lacerta subviolacea: cauda compressa, mediocri; corpore subviolacea, glabro, viscido, poroso; maculis flavis cinereisque vario; palmi tetradactylis, planta pentadactylus, omnibus muticis.*

Characteristically Barton kept the salamander in damp moss, noting that it crawled back when removed. He provided worms and insects, but they were refused. He described the shedding of its skin, and tasted the white fluid pressed from the salamander's tail, as did several other gentlemen. It tasted like muriatic of mercury—caustic and remaining in his mouth the greater part of the day, causing him to salivate. He recalled reports of Spanish and other physicians that when eaten raw, salamander might help syphilis and other diseases. Mr. Julius von Rohr, in Philadelphia in 1793, communicated to him that the uncooked flesh of several "lizards" induces genuine salivation and has been found beneficial in "lepra, and other diseases particularly those of a cutaneous nature."

Amphiuma tridactylum Cuvier, Three-toed Amphiuma, or Congo Eel

Peter Custis of Virginia interrupted his medical courses under Barton in 1806 to travel as naturalist with the Red River Expedition under surveyor Thomas Freeman.[2653] In a long, detailed letter of 1 June 1806 Custis reported to Barton from Natchitoches, Louisiana, about the progress of the Expedition. He described a captive large eel-like aquatic salamander with four very small legs each bearing three toes—truly an impressive animal, comparable in size to the Hellbender but wholly distinct from that Alleghany denizen. Custis wrote:

> *Twenty one miles below Natchitoches I saw an animal which was caught in a pond near the* [Red] *River that resembled in every respect, except the number of its legs, the Syren Lacertina.—It was furnished with four legs. Two were placed after the manner of the Lacertina, the other two were placed about six inches from the end of the tail.—It measured three feet in length & 6 inches in circumference.—I have called it Syren*

2651 Barton's paper describing *Lacerta subviolacea* appeared in *Trans. Amer. Philos. Soc.* 6(1) (1804): 112, pl. 4, fig. 6. Part 2 completed the volume in 1809. Holbrook, *Herpetology* 5: 10 (p. 67, illustration) suggests that "Now it is possible that Latrobe, or perhaps Dr. Barton himself, might have given some account of the animal to Rafinesque, or that he (Rafinesque) might have been present at the reading of the paper, for certain it is that he sent a good representation to Daudin, who published it in his work under the name it now bears, which was probably given by Barton, and communicated through Rafinesque to Daudin, for the latter gives the specific name as one *imposed* by Dr. Barton." François Marie Daudin (1774–1804) included the "imposed" name *Salamandra venenosa* Barton in his *Histoire Naturelle Générale...* (Paris, 1801–1804, 8 vols.), 8: 229. Vennosa: very poisonous. [Daudin's name was *Salamandra venenosa* Daudin, 1803, referred today to *Ambystoma maculatum* Shaw, 1802. RA.]

2652 *Systema Naturae, ed. 10*, 270. [Now *Ambystoma maculatum* Shaw, 1802. RA.]

2653 For a useful, fully documented introduction to this forgotten expedition see Flores, *Custis*.

> *Quadrupeda until we know more of it.–Had it not been in very advanced state of putrifaction I should have preserved & sent it on.*[2654]

Custis recalled the Sirens he had known in Barton's laboratory. Barton promptly published part of the Custis letter in his *Philadelphia Medical and Physical Journal* [2655] and hurried copies off to Lettsom and Banks to inform European naturalists. Barton, however, omitted any mention of Custis's *Syren quadrapeda*. In 1808 he adopted Custis's discovery and published on the salamander under the Custis name *Siren quadrapeda*.[2656] Here he referred to Custis only as "one of my pupils," in a footnote on p. 26.

This large handsome "Congo eel," as it is known in the Deep South,[2657] had first been discovered in South Carolina thirty-five years before and sent to Linnaeus by Alexander Garden.[2658] But Garden's discovery occurred too late in the career of Linnaeus to be reported in the several editions of *Systema Naturae*. It was not announced until 1821, when James Edward Smith published Linnaeus's correspondence, thereby establishing Garden's genus *Amphiuma*. Garden's comments in his letter of 20 June 1771 are relevant to Barton's uncertainty over Custis's discovery:

> *I must now say something of an unknown animal, which you will find in a glass bottle, and which, I have no doubt, will afford you much satisfaction. The specimen here sent is the only one I ever saw, and I shall think myself fortunate if it reaches you in safety. When I first received it, the length was 37 inches, though the animal was then become somewhat contracted. At first sight I suspected it to be another species of Siren, but upon nearer examination, I found so many differences, that there proves to be no relationship whatever between them...This animal has four feet, with two toes to each, without claws. The Siren has only two feet. It wants the gills and their wing-like coverings. It has no scales, nor, which seems to me very singular, any tongue! all which are found in the Siren. I have opened the throat and satisfied myself respecting the presence or absence of gills.*[2659]

Frequent commentary had passed between Garden and Linnaeus about *Siren lacertina*. Garden's earlier discovery and its gill-bearing state was referred to as a larval phase. Fourteen years after Custis described his "Syren Quadrupeda" Garden's detailed differences between *Siren* and his proposed genus *Amphiuma* [1821] were published.[2660]

2654 Barton papers, APS. [In 1807, Custis also described *Syren lacertina*, a synonym of the Greater Siren, *Siren lacertina* Osterdam, 1766. The Custis name *Syren quadrapeda*, also 1807, refers to *Amphiuma tridactylum* Cuvier, 1827. RA.]

2655 Vol 2. Pt. II (Sept. 26, 1806): 43–50.

2656 Barton, *Account of The Greater Siren lacertina*, L. 1767.

2657 An *Amphiuma* drawing by Titan Ramsey Peale of a Pensacola specimen sent by La Rue was published in *Ann. Lyceum Nat. Hist. New York* (1825), 1: Pl. XXII; one by an unrecorded artist in Paris of a New Orleans specimen sent by L. F. Tainturier des Essarts, Cuvier's correspondent, in *Mém. Mus. Nat. Hist.* 14:7 1826, Pl. II, figs. 4–6. [Cuvier] W. J. Hooker was introduced to Tainturier by Cuvier. For a photograph of a living *Amphiuma* see Flores, *Custis*, 226.

2658 Alexander Garden (c. 1730–1791), born in Aberdeenshire, studied at Edinburgh with Dr. John Gregory and Charles Alston; his M.D. from Aberdeen in 1753. He soon left for Charles Town, South Carolina, where he entered practice and from the beginning was interested in natural history. On a trip north he met Cadwalader Colden and on his return John Bartram. He corresponded with Pennant, Collinson, Ellis, Gronovius, Linnaeus, John Clayton, and John Bartram. A Loyalist, his lands were confiscated, and he returned to London in 1783. He had been elected a Fellow of the Royal Society, and became a vice president. His son, a Revolutionist, Major Alexander Garden, regained the property. Donald Culross Peattie in *DAB*; Berkeley, *Garden*.

2659 Smith, *Linnaeus*, 1: 333, 599, sensu *Siren*.

2660 *Amphiuma tridactylum* Cuvier, *Mém. Mus. Hist. Nat.*, 14: 1–13. 2 pls. 1827.

French naturalists pre-empted Barton's efforts to make known American novelties. Often thought of only as botanical explorers, André Michaux, Louis Augustin Guillaume Bosc (1759–1828), and Alire Raffeneau-Delile (1778–1850)[2661] sent zoological specimens to France. The American Revolution opened the country to French voyageurs sent by their government to seek potential products useful to its economy "impelled by a native curiosity as well as utilitarian considerations."[2662] Such familiar American denizens as the Cottonmouth moccasin [*Agkistrodon piscivorus*], Canebrake rattlesnake, Diamondback, and Copperhead [the various Copperhead snakes are also in the genus *Agkistrodon*]; Gopher turtle, Green frog, and the Hellbender were all collected and communicated to the Paris Museum by French naturalists.[2663]

Cryptobranchus alleganiensis Daudin, Hellbender

Hellbenders are "ugly, slimy and large" salamanders 12 to 29 inches long, and can even attain 38 inches, grayish brown, with short stout legs, flat head, eyes without lids, living in clear fast-flowing streams of the Mississippi River drainage. Barton had his "first intimation" of this striking animal in a journal of John Bartram, the animal[2664] noticed near Fort Pitt in 1762 (*Memoir concerning the Hell-Bender*, 21), before it had been scientifically described by French naturalists. John LeConte related the Hellbender's history: "It was called by the late Dr. Barton, who probably examined it before anyone else, Protonopsis."[2665] The different names Barton used record the confusion that arose in part from scattered observations of the animals during different developmental stages: *Salamandra gigantea*, *S. horrida*, or *Protonopsis horrida*.[2666] In January 1803 William Bartram had written Barton about the hellbender, "I have often heard of the Alligator of the Ohio and Western Waters, but have never seen it. I have as you do, supposed it to be a species of Gar."[2667]

Sonnini had described it as "la salamandre des monts Alleganensis" in 1801 in a general account of reptiles published in Paris, but he had provided no technical name. Bosc used the same designation in 1803. Had the Hellbender ever come up in conversation between Barton and Bosc? André Michaux may have seen the animal as early as 1794 in the vicinity of Davenport Plantation on North Toe River, present Mitchell County, western North Carolina. There he took lodgings again in 1785 and 1796, and there he collected the specimen that reached Paris. Daudin in 1801 described and named *Salamandra alleganiensis*.[2668]

François Michaux returned to the "charming plantation" of Martin Davenport in September 1802, enroute to the "Western" country. Davenport presented a "mountain alligator," as the mountain folk called it, to François as he had for his father on an earlier visit.[2669] Did François ever mention the Hellbender to Barton on a visit to Philadelphia?

Barton in his letter to Lacépède mentioned the "very remarkable undescribed" hellbender:

2661 On these collectors see "Table des personnages" in Ewan, "Explorateurs Français," 34–35, 37. Georgia R. Beale, "Bosc and the exequatur," *J. Nat. Arch.* (1978) 10: 113–150. portr.; *TL-2*.

2662 Gilbert Chinard, *Trans. Amer. Philos. Soc.* 10 (1957): 344.

2663 Harper, "Herpetological nomenclature," passim.

2664 Quoted in Darlington, *Memorials*, 248–249.

2665 [*Protonopsis horrida* Barton, 1824, attributed by LeConte, *Ann. Lyc. Nat. Hist. New York*, 1: 57. ASW.]

2666 *Ann. Lyceum Nat. Hist. New York* 1 (1824): 57.

2667 Barton papers, APS.

2668 Harper, "Herpetological nomenclature," 720, corrected Daudin's attribution to Virginia, and to Doe River, rather than to Toe River in North Carolina. Adler, *Early Herp.* reproduces Richard Harlan's "Observations on the genus *Salamandra*," *S. gigantea* (Barton), 222–232. [*Salamandra alleganiensis* Daudin, 1803, *Hist. Nat. Rept.* 4: 305. ASW.]

2669 F. A. Michaux, *Travels to the west of the Alleghany Mountains...* (London, 1805), 262–263. See Savage & Savage, *Michauxs*, 252.

Our western rivers, such as the Ohio and its branches likewise possess a very remarkable undescribed species of lacerta, if indeed, it be not entirely a new genus. It is sometimes seen near twenty inches in length. By the white people it is called alligator, though it is very different from the southern animal of this name...This animal lives upon fish, frogs, &c...The Indians say it is poisonous: but this is a doubtful point.[2670]

There is a large undated watercolor drawing (Figure 70) of the Hellbender among Barton's papers that must be his "Pewit." In 1812 he reported that the Delaware tribes knew it as "Tweeg," and the Minsi as "Tweechk." In one of his notes Barton mentioned that Tiebout had delivered "the etching which I have done of Pewit. I began this etching a considerable time since and finished it yesterday and this morning. Brown took off for me five prints of this plate...just as the copper came from my hand: not a line or a dot having been added by any person else."[2671] In his *Memoir concerning the Hell-Bender* Barton noted he had received a "very large and perfect specimen" in June 1806 from "the River Ohio" about sixty miles below Pittsburgh.

Barton stressed the size of the Hellbender when he addressed the meeting of the Philadelphia Linnaean Society in 1807: "the largest Salamandra, yet known, is a very common inhabitant of the American lakes, Erie, Ontario, &c., and also the Ohio, and other waters of the Mississippi. It is less common in the western streams of the Susquehanna. I call this species Salamandra horrida."[2672]

It was probably his correspondent on another occasion, George Wilcox, who wrote in answer to Barton's queries. He referred to the Virginian, Dr. John Floyd, who won his degree under Barton in 1806. This letter was written before Wilcox moved to the new community of Steubenville on the Ohio River. In the following letter he mentions Barton's having a drawing of the Hellbender, which he refers to as alligator:

Abingdon, Virginia May 20, 1807

Dear Sir,

I have just set down to communicate to you such facts as are in my possession concerning the alligator particularly in answer the various Queries stated by you. some appology is necessary for the great delay of this communication. 1st the great quantity of snow and rain which fell in March rendered the roads completely impassible on horseback. I did not arrive in this country untill the third of May the spring being so late that the waters had not fallen nor the animal come out from its winter quarters. it generally makes its first appearance about the time the male fish swim in pursuit of its female, (which is called shoaling) I believe the alligator is on the same business; this season in common years is the last of April and first of May. This is varied by the commencement of warm weather, Many falls of rain continued the waters muddy so that the animal could not be caught. Sometime was occupied in visiting and professional business. It is known by the names of Alligator, hellbender or in Kentucky, hellbinder, Water-Pup &c, the first is the most general, and common, the second nearly as common, the last is not general–I think the greatest length of this animal which I have seen is 18 inches; its common length is from 12 to 15 inches: young ones are seen very small from 3 to 6 Inches. Dr. Floyd mentioned that he thinks he has heard (by negroes) of its being found in the Kanakawa

2670 *Philos. Mag.* 22 (1805): 205.

2671 Barton papers, Miscellaneous, 22 Jan. 1810, APS.

2672 *Discourse*, 23. Barton added a footnote in which he suggested calling it *Salamandra maxima* (*PMPJ* Suppl. 2 (1807): 196–197).

or New river 4 feet in length[2673] *but this is abundantly contradicted, by the information of every person, living, on this river—negroes and intelligent Whites, inform, me that they have never seen it more than 16, or 18, Inches in length: from every account which I could obtain from persons living in Tennessee, Ohio, and Kentucky, it appears that this animal is pretty uniformly of the size, which I have mentioned. I do not know the minute weight, but I can venture to affirm that its greatest weight is not more than 4 lbs. its common weight, is from 2 to 3 pounds the males are lighter—I find it difficult to describe the animal so as to give you a good Idea, of its form and appearance—by the assistance of the drawing which you are in possession of...together with one that I am preparing and the Guana in your possession You can have a pretty general Idea of its appearance—its form is something like the Guana only the alligator is much flatter being about an inch in diameter, from the top of its back to the surface of the belly, it is very flat[.] its head is very flat and as broad as any part of its body which is in common from 1½ inches to 2. its mouth is very large, and its figure is a complete semicurcle—its neck is smaller and about an inch in length, at this spot comes out two feet on a level with the surface of the belly a fold of skin covers their projection from the body: its body gradually increases in size to the middle; it then gradually decreases untill within 2½ inches of its extremity where 2 more feet (just as the first) comes out; from this back it tapers very fast in shape of a wedge untill it terminates in cartilage which is the animal['s] helm and chief assistant in swimming; this tapering takes place from its sides to a common centre so that when the animal lays flat on its belly the sharp edges of the wedge are vertical, or ranges with the back and belly—it is covered with a very tough skin more so than the eel the color of the head, back &c is a dark brown a little like the black rust of Iron laying in water[;] the Skin of the belly is a greenish yellow a good deal like half tanned hides wet[;] the back sides and head, are all covered with a kind of white, hard, mucus, matter, which they can emit from any part; this is extremely adhesive sticks very firmly to a gig or other instrument that is stuck into the animals body—this is immediately hardened by the water—this is so hard to remove from the gig, that it cannot be used in fishing for some time, the animal is not spotted, but its color is a little different—it being much darker in the spring; at that season it has not so much of the mucus about it; the external differences between the male and female is hardly noticable. the male is less and I think rather of a lighter color. its generation I believe is carried on precisely as in the fish and at the same season. I dissected ours in its (stomach or uterus) a pouch one orifice of which led to its mouth the other with small white tubes connected with 2 small glands which had 2 other tubes connected with its anus—both orifaces of this pouch was completely shut by a firm glutinous matter—each end and its body was very firm and corrugated; this uterus with its contents weighed 2 ozs. the number of eggs were at least 300 or more. precisly of the appearance of the fishes spawn each ovo connected to its fellow by a white gelatinous thick fluid* [the letter is incomplete][2674]

In the "Journal" of his 1810 trip, which he had hoped to publish, Barton reported that the "Salamander horrida, or maxima" formerly "inhabited the water of the Beverley River and its

2673 Not a reference to the true alligator. [*Alligator mississipiensis* Daudin. RA.]

2674 Barton papers, APS.

branches. I believe it is now entirely unknown here, though still in the waters of the Holstein [Holston] and other western rivers of Virginia."[2675] In his *Memoir concerning the Hell-Bender*, Barton referred to his "Journal" notes, "sufficiently ample, concerning the history of this hideous reptile [!] which is called by the negroes in the western parts of Virginia, &c Hell-Bender."

Siren lacertina Österdam, Greater Siren

Barton's interest in ontogeny was secondary to his effort to establish a classification of American amphibia. That some salamanders have persistent gills in the sexually adult state, and others metamorphose from the feathery gill condition to their absence as adults, raised the question of what factors control those differences. The axolotl of Mexico, a large edible "water dog" (*Siredon lermaensis*) known from the marshes of the Río Lerma in the Valley of Toluco,[2676] interested Barton. A note to the effect that he "found a fine example in Cervantes," noticed no doubt in that naturalist's "Discourse" on the botanic garden in Mexico City, may have led Barton to seek a specimen of this remarkable animal. Mexican Axolotl [*Ambystoma* Tschudé, 1838] is a handsome example of neoteny.

The neotenic Siren (*Siren lacertina*) of the southeastern and central states was the first American salamander described scientifically. In 1765 Alexander Garden sent a specimen from South Carolina to Linnaeus, who wrote to Dr. Garden "nothing had ever so much exercised" his thoughts, nor was there anything he so much wished to know "as the real nature of an animal so extraordinary."[2677] Barton received live specimens in 1806 and 1807, and published a pamphlet of 34 pages with a drawing in August 1808.[2678] It is probable, Barton wrote, that Garden received his report of a singing voice, hence the "siren," from the Negroes, "who, although they certainly see more of the Siren than the White inhabitants do, are not the best authorities in Natural History." Barton had heard "a kind of hissing noise" but no song or plaintive note. He discussed the anatomical features, after his and Dr. R. Hewson's dissections. Hewson opened the gallbladder and observed breathing, both in and out of water. Was this Dr. Thomas Tickell Hewson (1773-1848)[2679] or a relative?

Barton had sought aid for publication of his *Siren* before the scientific community in Europe. He wrote to Sir Joseph Banks 29 March 1807:

> *Sir,*
>
> *I feel a good deal anxious to know the fate of my paper concerning the Siren, which I forwarded to you, in the month of April, last. The animal is still alive, and likely to continue so, for a considerable time. Nothing has, hitherto, occurred to induce me to change my opinions, as expressed in the communication. The Brachiae have undergone no alteration, either in structure, or in appearances, and the growth of the animal is so very slow, that I cannot perceive that its size has increased, in the time of eighteen months, that it has been in my possession. In short, I cannot entertain a*

2675 Barton papers, APS. *Salamandra gigantea*, *S. horrida*, and *S. maxima* are all substitute names attributed to Barton, 1808. Cf. Harlan. 1825. *Ann. Lyc. Nat. Hist. New York* 1: 27, 320.

2676 See Hans Gadow, *Through Southern Mexico, being an Account of the Travels of a Naturalist* (London & New York, 1908), 9-16. *Siredon lermaensis* Smith & Taylor, 1948, is now referred to *Ambystoma lermaense* Taylor, 1939. [*Univ. Kansas Sci. Bull.* 26: 427; and Smith & Taylor, 1948. *Bull U.S. Nat. Plus.* 194: 8.]

2677 Holbrook, *Herpetology* 5: 104. See Berkeley & Berkeley, *Garden*, 190-197, for detailed account. A pickled specimen from Garden is at the Linnean Museum in Uppsala. *Philos. Trans.* 56 (1766): 192.

2678 *Account of the Siren lacertina*, 29. "American Siren lacertina," by Benjamin Tanner, and the copperplate are preserved at APS.

2679 Drake, *Dictionary*; elected professor of comparative anatomy in 1814. Carson, *History*, 135.

> *doubt, that the Siren is a finished animal, and not a mere cordylus, or larva.*[2680]

Whether Banks responded we do not know, but on 13 June 1808 Barton wrote himself a note:

> *I am at this very time, printing the paper on Siren which I sent to England in April 1807. The first proof was sent to me this day. I have not yet (June 19th) returned it finally to the printer.*[2681]

During the delay in publication Barton sought more specimens and observations, and 13 June 1808 made himself a memo to that effect. Two days before, Thomas G. Prioleau of Charleston regretted that he had not been able to obtain a Siren.[2682] Barton explained in a "Note" to his 1808 *Account of Siren lacertina* his intentions toward a more complete account:

> *Only fifty copies of the work are printed, and those will be distributed among a few of my friends, chiefly foreign naturalists. It is my wish, that the entire work may not on any account, be republished by any of these gentlemen to whom I may transmit copies. I have no objection to its being carefully examined, criticized upon, and quoted, or referred to. At some future period, I shall publish a more finished account of the American species of Siren Proteus. I have already, indeed, since the original date of my letter to Mr. Schneider in April, 1807, greatly extended my acquaintance with these animals; and have nearly completed the anatomical history of one of the species, and illustrated the anatomy of the parts by fine drawings...The pages now circulated among my friends, may serve at least, to amuse them, and to remove some of the doubts concerning one of the most curious families of animals in that vast, various, and interesting assemblage, to which the naturalists have given the name Amphibia.*

The preface was dated 19 August 1808. In a conversational tone Barton addressed his dedicatee, Dr. Schneider,[2683] on pp. 26–27.

> *May I flatter myself, that the time is not very distant, when you and the other* [European] *naturalists who have written so ingeniously on the subject of the Siren, will fall, however cautiously or reluctantly, into my opinion, that this reptile is really, a perfect or finished animal, and that the American Sirens, together with Proteus anguinus, and other similar animals of your continent, must form a genus in the vast class of Amphibia, entirely distinct from the family of Salamanders, however nearly allied to it?*

Barton had kept a living *Siren lacertina* (Figure 68) about eighteen inches in length "for about a year," having inspected it almost daily without noticing any change in the appearance of its brachiae, the forelimbs unchanged, and no sign of the development of posterior feet. Barton mentioned that a "public museum"—meaning Peale's Museum—had exhibited a Siren two and a half feet in length. In a memorandum of 29 March 1807 he noted that the Siren

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2680 Barton's copy, APS.

2681 Memorandum with "On the geographic distribution of trees and shrubs," Barton papers, APS.

2682 Thomas Grimball Piroleau, Charleston, 11 June 1808, to Barton, on the brig *South Carolina*, Capt. Ferril. Barton papers, APS.

2683 Johann Gottlob Schneider (1750–1822), author of *Historiae Amphibiorum Naturalis et Litterariae* (Jena, 1779–1801). Ewan, "Barton's library." [*Proteus anguinus* Laurenti, 1768, the Olm, or European Cave Salamander.]

"being in my parlour" had remained under water thirty-one minutes without coming to the surface to breathe. He had received several living Sirens from South Carolina from time to time, and he dissected one to settle the question raised by the Dutch naturalist, A. G. Camper, as to whether the Siren had lungs, and he found it had: it used both lungs and brachiae to breathe, and he reported he had found two large "uncommonly capacious" separate sacs in his freshly killed animal.

Barton hoped the name *Siren* would "ultimately be expunged" from the literature, and favored the name *Proteus* of Dr. Laurenti[2684] for related animals, "the *various* forms, and the *mixed* structure and functions of these animals...for whether the Protei [of Europe] or Sirens be perfect animals, or merely cordyli, I am fully persuaded, that the ultimate decision of naturalists will be, (p. 31) that these animals must be referred to one and the same genus..."

In closing his *Account of Siren lacertina* Barton observed that:

> *...science frequently suffers as much from an excess of reserve as from a prompt, or even ardent, decision. If I am wrong in my opinion, that the Sirens and Protei are perfect animals, and not mere cordyli, it will at least be acknowledged, that I have founded that opinion upon a greater body of facts and observations than were in possession of some of these distinguished naturalists, whose theory...is entirely the opposite of mine.*

Adrian Gilles Camper was one of those "distinguished naturalists" who disagreed with Barton on the question: do salamanders with gills as adults also possess lungs? Camper decided *Siren lacertina* did not. Having read Alber's favorable review of Barton's *Memoir concerning the Hell-Bender*, Camper wrote to Wistar 2 June 1815 from Franeker:

> *I found in the German litterary newspapers the description Anatomical and Physiological of the Sirens, by Professor Barton at Philadelphia, and his Anatomical history of America's Snakes vastly praised,—and should be happy to possess both—are they to be payed? You will find my conjectures about that matter in the Description du Musée—. The Lacertina Siren methinks belongs to the Botraciens and seems to be a longtailed, two feeted Salamander, with ever enduring gills and lungs.—I like very much the anatomical description and comparison of the Siren, and Proteus Anguinus by Cuvier in the Cahiers d'Anatomice Comparée of Humboldt—however the Anatomical researches by that illustrious author dosnt give me the Satisfaction I expected.*[2685]

Camper on 20 June 1816 thanked Wistar for his letter of 3 April 1816 and the "interesting books and objects of zoology" but regretted the skeleton of the young alligator [Hellbender] Wistar had sent had been broken in transit. Camper commented that Barton's description of *Siren lacertina* "is the best I know and I wonder that Cuvier had no knowledge of it when he wrote his 'recherches anatomiques sur les reptiles regardé comme Lacertens.'"[2686]

Ill on his way home from Europe, and knowing that death was imminent, at Princeton 21 November 1815, Barton dictated to Thomas Pennant Barton that:

> *...a short letter which I wrote to Mr. Cuvier while in Paris concerning the siren, should be added to my printed paper concerning that animal, in*

2684 Joseph Nicholas Laurenti, *Specimen Medicum, exhibens Synopsis Reptiliuim Emendatum...* (Vienna, 1768). Nissen, *Zool. Buchillust.* 1: 244. Copy ANSP.

2685 Adriaan Gilles Camper (1759–1820), physician and naturalist from Franeker, The Netherlands. Wistar letters, no. 30, APS. *Description succincte du Musée de Pierre Camper* (Amsterdam, 1811).

2686 Wistar letters, no. 31, APS. A copy of Cuvier, *Recherches*, was once in Barton's library. Ewan, "Barton's library."

> *the republication of my scattered tracts; a list of which is mentioned in the memorandums which were made in New York. A copy of this letter will be found among the papers which I brought from Paris, I think, in the little red trunk.*[2687]

Composed in strong cadences and documented with full references to the European authors, Barton's essay on *Siren lacertina* and his *Fragments* represent the best of his significant zoological contributions. Barton was handicapped in not having a cabinet of specimens to compare the salamanders as they came to his attention, and in his limited access to the important European literature. This led to confused identifications and delayed publications. Barton's papers failed to reach the critical zoologists who might have taken up his ideas, though he certainly tried to circulate the small printings. Withal, his drawings illustrating his essays, his wide correspondence, and suggested opinions on life histories of amphibia, influenced the later writings of LeConte, Cuvier, Harlan, and others.

Reptiles

Alligator mississipiensis Daudin, The American Alligator

> *I have seen an alligator take up out of the water several great fish at a time, and just squeeze them betwixt his jaws, while the tails of the great trout flapped about his eyes and lips, ere he had swallowed them. The horrid noise of their closing jaws, their plunging amidst the broken banks of fish, and rising with their prey some feet upright above the water, the floods of water and blood rushing out of their mouth, and the clouds of vapour issuing from their wide nostrils, were truly frightful.*[2688]

Such passages from William Bartram's *Travels* stirred readers from Philadelphia to London. This description of the American alligator, *Alligator mississippiensis* Daudin, from his field experience in the St. Johns River country of northern Florida in April 1774 appeared in 1791. Bartram's wanderings had been supported by Dr. John Fothergill in England. Often overlooked is the "report" made for Fothergill that remained unpublished until 1943 when Francis Harper prepared his extensively annotated paper.[2689] This "report" and the lost field books were the basis of Bartram's classic *Travels*.

The American alligator was first described and illustrated zoologically by Mark Catesby fifty-three years before Bartram's account. Catesby's *Lacerta crocodylus*, the same name as taken up for both Old and New World saurians by Linnaeus in 1758, was illustrated indifferently by Catesby in his great work.[2690] William Bartram's drawing was "perhaps the most important drawing ever executed by Bartram"[2691] in the opinion of Francis Harper. It was the dramatic description of the alligator, however, and not the exciting drawing sent to Fothergill (so long unknown to the public) that led to the serial publication of Bartram's *Travels* in England. The "Surprising account of American crocodile" appeared in 1793 in the *Wonderful Magazine and Marvelous Chronicle*, 4: 364, following the London edition of *Travels* in 1792.

Although Barton never did see the alligator in the wild, he was familiar with small specimens preserved in spirits. Henry Wansey reported such in the Yale museum[2692] in 1794,

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2687 Barton papers, HSP.

2688 Bartram, *Travels*, 123. See also Harper, *Bartram's Travels*, 433-434.

2689 *Trans. Amer. Philos. Soc.* n.s. 33 (1943): 151.

2690 Catesby, *Natural History*, 2: pl. 63.

2691 Ewan, *Bartram*, 24, pl. 49, the drawing probably sent to Fothergill from Charleston in March 1775.

2692 Jeremy, *Wansey*, 72.

and it is likely specimens were in Peale's Museum, for the elder Peale took the opportunity of Humboldt's return to Paris in 1804 to deliver a "Small aligator preserved" to the Muséum National.[2693] After Dr. Thomas Prioleau, Barton's pupil, returned to Charleston, he wrote Barton that he had put on board the brig *South Carolina*, Captain Ferril, "an alligator," alive [?], "the only one I have been able to procure."[2694] Barton had pointed out in his *Discourse* that "The natural history of our Alligator is worthy of particular attention. If I do not greatly mistake, *two* distinct species of the genus inhabit the shores and rivers of the United States, to the south of Virginia."[2695] He also suggests that the musk might be collected commercially. In his notebook Barton entered that "Southern ladies use a kind of musk from a kind of bag," and that "Alligator occurs as far north as Alligator Dismal Swamp between Solenton and Newbern, N.C.," on the authority of Gov. Martin in 1797,[2696] and that great numbers obtained at Cape Fear, "some twelve feet long," this surely on the word of William Bartram. Barton mentioned, perhaps on Bartram's information, that the alligator swallows a pine knot rich in turpentine at the end of November, and in the spring it will be found to be quite smooth.[2697] Here the accurate 1736 drawing of the alligator by Philip Georg Friedrich von Reck, recently published, is relevant. The Indian legend is that the nuts and pieces of wood swallowed at the end of the season support life "through the winter only on these things."[2698] Such gastroliths may be ingested as the alligator forages on the pond bottom.

Public disbelief of William Bartram's account of bellowing alligators persisted from 1794 when Henry Wansey visited him at his home on the Schuylkill[2699] even after John Eatton LeConte, Jr., visited with Barton in 1811. "Mr. Le Compte thinks Bartram wrote much of his Travels from memory; he seemed not, I think, to repose much confidence in him; & don't believe the story of alligators. He added, Bartram is much laughed at in Georgia."[2700] When LeConte himself travelled through Florida in 1822 he learned firsthand of the "unimpeached integrity and veracity" of William Bartram's findings.[2701]

Crotalus 1758, Rattlesnakes

Barton's enchantment with the rattlesnake engaged him especially during 1785 on his trip through several of the western settlements of Pennsylvania with his uncle David Rittenhouse. He had been in the prime habitat of the Timber rattler, and surely confronted one. He was seeking information on rattlesnake poisoning, its prevention and cure, his interest in plant remedies continuing through his medical instruction and his practice.

In his first paper on rattlesnakes, read 19 August 1791 to the American Philosophical Society, "An account of the most effectual means of preventing the deleterious consequences of the bite of Crotalus horridus or Rattle-snake," he stressed the importance of placing a ligature above the point of penetration. The Indian method of applying a tourniquet and promptly sucking the wound, observed by Barton's "ingenious and worthy friend Mr. William Bartram is, when the site of the bite will permit, most important." Western settlers, Barton stated, "treat the bite by scarifying, applying a poultice of salt and gunpowder, and the blistering bark of mocker nut, Carya alba." They supplemented this with various plant

2693 C. W. Peale, Letterbook (1804), 94, HSP.

2694 11 June 1808, APS.

2695 *Discourse*, 24. Had Barton heard that the second crocodilian, now called *Crocodylus acutus* Cuvier, occurs in southern Florida? Simpson, "Paleontology," 176, fig. 23, mentions a fossil crocodile in New Jersey. RA.

2696 Barton notes on reptiles, HSP.

2697 According to Bartram, a brickbat worn quite smooth was taken from an alligator's stomach.

2698 Kristian Hvidt, *Von Recks's Voyage: drawings and journal of Philip Georg Friedrich von Reck* (Savannah, 1980), 64–65.

2699 Jeremy, *Wansey*, 112.

2700 Barton's memorandum, dated 4 October 1811, miscellaneous papers, APS.

2701 *Proc. Acad. Nat. Sci. Philadelphia* 7 (1854): 13.

infusions taken with milk. From Barton's assertion that when a bite affects a larger blood vessel of "the unhappy sufferer," and "the extinction of life is at hand," he intimates that he has witnessed such incidents in his travels. He warns against looking for "absolute specifics," and he lists thirty-three plant remedies that have been used internally or externally or both, by Indians and by white settlers, without, however, any comment on their effectiveness.[2702]

Between 1792 and 1814 Barton published altogether nine articles on rattlesnakes, totaling 285 printed pages, counting his separate printings, not all of which survive, and those in the *Transactions of the American Philosophical Society*. Barton evidently influenced John Walker of Edinburgh. Here are the lecture notes of a student in Walker's class on the fascinating powers of serpents:

> *It has been a very ancient persuasion in almost every Age, that the serpent race possessed such a fascinating power over the smaller animals, particularly ever used against birds. By late accounts, this power is exerted in this manner as in the Rattlesnake. This snake gets to the root of a tree, fixes its eye on a small bird, the moment the bird perceives the snake it flutters, trembles, descends gradually nearer and nearer until the serpent seizes him. This extraordinary fact is spoke of by many travellers, Dr. Mead and many other respectable authors are fully persuaded of the Truth of it and is fully credited by Linnaeus,*[2703] *not from his own observations but from those of his pupils that went abroad. But it is one of those public reports for the Truth of which we have reason to remain in suspense.*[2704]

The attitude of the Indian was a consideration. Heckewelder wrote from Bethlehem 26 September 1795 to Barton in a letter on the Indian uses of plants:

> *I do not recollect to have heard the Indians mention the Snakes charming Birds. I have frequently heard them speak of their ingenuity of catching Birds, Sqirrils &c. The Rattlesnake to my certain knowledge was once held in particular Esteem by the Delawares. In the Year 1762 while I lived in Tuscaroras, I was several times prevented by the Indians from killing them, being told that the Rattlesnake was their Grandfather, & durst not be hurt. Since that time I have been prevented from killing them, because the whole race of Rattle Snakes would grow angry at it, & would give Orders to bite every Indian they came accross—of late Years, & principally such Indians who have connexion with the White People, these Notions seem to be lost; they will kill them; whenever they meet them, the same as the White People will do.*[2705]

As early as 1788 live exhibits were a feature at Peale's Museum, and a rattlesnake was one of the first. Charles Willson Peale believed in instructing as well as amusing, "the Birds and Beasts will teach thee." He had set up his exhibit of the fang of a rattlesnake furnished with a lens to show the passage of venom into its victim. Palisot de Beauvois was investigating the "rattle viper" (Peale's favorite name) for his French colleagues, and together he and Peale found nine live specimens in New Jersey pine barrens, including "a monstrous female" with nine rattles. Back at Philosophical Hall all the Peales assembled to watch the selection of specimens to send to the zoologists in Paris. "Young Dr. Barton was there," as Sellers tells the

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2702 Barton, *Crotalus*.

2703 "Aves Sciurosque ex arboribus in fauces revocat" was included in the description of *Crotalus horridus* by Linnaeus, *Systema Naturae, ed. 10*, 214.

2704 John Walker, notes taken probably by Thomas Johnson, on natural history, 3 May 1790, vol. 6 [f.8], UELA.

2705 Barton papers, APS.

story, "and seemed to fear the fascinating faculty himself, for he made his observations seated on a table at a safe distance."[2706] Scientific observations were interrupted when, Rubens noted in his serious way, "unexpectedly, came a party of Indians, alert spectators. Too quick to be stopped, one warrior reached in, whipped out the largest, slashed out her still-beating heart with his knife, and munched it down. They have an idea, that if a living heart of a rattlesnake is swalled, that no harm will attend them thereafter."[2707]

> *I hope you will receive...the Rattle Vipers and black snake* [wrote the elder Peale to Geoffroy Saint-Hilaire,] *sent in the care of Mr. Adet in good condition.* [Peale was concerned they might suffer for want of food.] *A Rattle Viper which I have and which was taken at the same time with those sent, on 20th ult. eat a mole and since one bird, so that if Mr. Adet has a short passage, a week or two will make but little difference and you may have them in time to make them relish their confinement.*[2708]

Soon after Rubens Peale's demonstration, Barton published his *Memoir concerning the Rattle-snake* of 1796, "concerning the fascinating faculty." As usual he reviewed the literature, first Cotton Mather in 1714 and Paul Dudley in 1723, "to look for beginnings of this ridiculous notion among our Indians." Peter Kalm's assertions were discounted and Lacépède's belief that the "infectious breath" agitates the victim and prevents its escape, was refuted. Barton agreed with Peale in disclaiming the fetid breath of the snake. The California herpetologist Laurence Klauber presents a documented review of the long history of snake fascination.[2709] John Banister's record of the late 1690s, recently published from manuscripts, not available to Barton or Klauber, is of interest here for it relates to early settlers of the James River country of Virginia:

> *This snake has a kind of fascination in its eye, with which it does constrain some creatures (tho' they are sensible of, & bewail the danger they are in) to make themselves a prey unto it. For I have been told by more than one or two that they have accidentally seen a squirrel running down a tree, & up a little way & down again, all the while crying out & trembling, so that it caused them to approach nearer to the place to discover the occasion of this so great consternation in an animal they could percieve nought did molest it, where at the foot of the tree they beheld the snake lye gaping with its eyes fixed on the squirrel, which at length tho' with a great deal of reluctancy, run full into it mouth.*[2710]

The Italian naturalist Luigi Castiglioni's extended account of the rattlesnake, called *caudisono* by the Italians, includes a report of a specimen with 44 rattles taken near Fort Allen in 1786.[2711] This exceeds the highest figure of 29 cited by Laurence Klauber.[2712] In Vermont Castiglioni killed "one of the smaller ones," which measured two and half feet. To him the

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2706 Sellers, *Peale's Museum*, 91. Probably in 1796.

2707 Rubens Peale's "Memorandum...events of his life," p. 55. Peale papers, APS.

2708 C. W. Peale, Museum, 1 June 1797, to Etienne Geoffroy Saint-Hilaire, draft in C. W. Peale, Letterbooks, Catalogue of Museum, APS.

2709 Klauber, *Rattlesnakes*, 1221–1222. In his bibliography, p. 1271, he lists Barton's publications on rattlesnakes. Kraig Adler refers to Barton as "the only person of note who published on reptiles before the founding" of the ANSP in 1812 (*Amer. Bookman's Weekly* (4 Aug. 1986): 330, illus. p. 326).

2710 Ewan & Ewan, *Banister*, 374, and note 16 on 389.

2711 *Viaggio* 1: 119–122; Pace, *Castiglioni*, 65–66.

2712 Klauber, *Rattlesnakes*, 259, for *Crotalus horridus* L., the Timber Rattlesnake.

darting tongue of the snake suggested squirming worms and so attracted birds that fell to its fascination."[2713]

Thomas Pennant's views were always noticed by Barton so, when in 1787 Pennant had written that it is "difficult to speak of the fascinating powers of the rattlesnake," Barton quoted this hesitant statement in his first *Memoir concerning the Rattle-snake*. Pennant had conceded from the reports of "authors of credit," Lawson, Catesby, Robert Beverley, and Colden, some fascinating powers. "Birds have been seen to drop into its mouth, squirrels descend from their trees, and leverets run into its jaws."[2714]

Barton in 1796 stated that "I have two objects in view: first, the investigation of truth; and secondly, the dissipation of, at least, one particle of that huge mass of superstitious credulity, the influence of which is perceived, wherever nations or individuals have been found."[2715]

Dr. Mitchill of New York was certainly the author of the anonymous review of Barton's *Memoir* in the *Medical Repository*. He agreed that Barton's reasons for discrediting "fascination" are "for the most part satisfactory and the explanation...of the effects attributed to this supposed faculty is, probably, many times just."[2716] Mitchill suggests that situations vary, however, and that the victim by its actions may precipitate itself into the danger it would seek to avoid. He added: "[Readers] naturally expect to derive entertainment judging from the authors' well-known ingenuity in this kind of information." Mitchill then offers his own views. He suggested that the bird may die from a paroxysm of fear when there is no external injury from the snake. There might be "some plausibility" in the idea of Professor Blumenbach that fascination is in part effected by the "steadfast looks of the serpent."

Concerned that popular belief still fancied fascination, and that he had been misunderstood by Fabricius, Barton appended a note to Fabricius's contribution in "Ophiology": "It will be evident to any one, who has perused with attention, my two publications on the supposed fascinating faculty of the Rattle-Snake, and other American serpents, that Mr. Fabricius has by no means fully comprehended my peculiar theory. I have not adopted the hypothyesis of the very respectable Kalm, with whose name mine is mentioned, by the Danish Professor." Barton followed this with Heckewelder's report from Pemaholend, an aged Delaware Indian, that the idea of fascination may have come from the Indian legend of *only one* rattlesnake with that power, and it was destroyed. "The rattlesnake obtains its food merely by slyness, and a persevering patience."[2717]

Hugh Williamson[2718] may or may not have read Barton's essay, but he had surely read Mitchill's review in the *Medical Repository*. In a paper in that journal Williamson confessed that "the reader shall judge whether I am an advocate of truth, or the friend of vulgar errors, when I have expressed my belief, that serpents have the power of taking their prey by a process called fascination."[2719] He concluded fascination was the stupefying power of fear. Williamson, a native of Pennsylvania but then in medical practice in New York, was a friend of David Hosack, who wrote his memorial. Barton's pupil, William Darlington, followed with "remarks" in the *Medical Repository*. He admitted that Williamson's explanation of fear was "ingenious and infinitely more plausible than the old obsolete stories about charming."[2720] The bird or squirrel is attempting to drive off the enemy, whether it is nesting season or not. He concludes his article, "However, I will not enlarge further on this curious subject at present,

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2713 Pace, *Castiglioni*, 66.

2714 Pennant, *Supplement to the Arctic Zoology* (London, 1787), 88.

2715 The *Memoir* was first published as a whole title in 1796 while awaiting the appearance of *Trans. Amer. Philos. Soc.* 4 (1799). Adler, *Early Herp.*, reproduces *Memoir concerning the Rattle-snake*.

2716 *Med. Repos.* 1 (1797-1798): 78-83, a detailed review of the subject from Indians and European authors.

2717 *PMPJ* 2 (1805) Pt. I: 166-167.

2718 Hugh Williamson (1735-1819), M.D. Utrecht, 1766, wrote on the electric eel in 1775. He believed that every comet and planet was inhabited. Bell, *Early Amer. Science*, 77, but see Sabin, *Dictionary*, 104455; Kelly, *Cyclopedia*, 513-515; Francis, *Old New York*, 97; J. G. deR Hamilton in *DAB*.

2719 *Med. Repos.* 10 (1807): 341-348.

2720 *Med. Repos.* 11 (1808): 257-260.

which has been so ably discussed by the learned Professor Barton; but will conclude with assurance of my high consideration and respect."

Barton had preprinted a few copies as he stated in the preface of *Memoir concerning the Rattle-snake* of 1796, "with a view of distributing them among my friends, and those who are curious of researches in natural history." Characteristically most of these went to correspondents in Europe. His privately printed texts, however, are not *verbatim* reproductions, but each printing was an extended and emended version.

Barton continued to solicit observations from such correspondents as the Honorable John Davis of Boston. In a letter of 12 February 1802, Davis wrote:

> *I have read the pamphlet* [Memoir] *with pleasure and improvement as I do all your publications. I put your essay in the hands of some of my friends. You almost persuade them, but they still adhere to the old opinion. One or two of them have stated to me some facts in confirmation of the fascinating power of serpents, which I have some times thought of communicating to you.*[2721]

In 1804 Barton announced that he was "preparing for the press" a treatise entitled "The Anatomy and physiology of the Rattle-snake and other North American serpents. Illustrated by coloured engravings."[2722] In his open letter to Lacépède in 1805 he enlarged on his plan:

> *I have had a number of very fine drawings made to represent the anatomical structure of the crotalus. These drawings it is my intention to have engraved, by some of the best of your artists, for my Anatomy and Physiology of the Rattlesnake; a work which I hope to publish in three or four years. It will contain every thing I have observed, or have been able to collect, relative to the structure, the functions, the manners, &c. of the crotalus horridus; together with observations on some other species of the same genus, and on various species of coluber, &c. all natives of the United States.*[2723]

Most of the drawings Barton mentioned were the work of Benjamin Henry Latrobe, architect, engineer, and artist-naturalist.[2724] Altogether twelve watercolors made from dissections and illustrating the anatomy of serpents survive among Barton papers (Figure 95). Although unsigned and undated, these drawings carry legends and descriptions in Latrobe's unmistakable hand. The shading and coloration confirm the identity, as do the detailed labels of scutal muscles, squamal muscles, etc. Reported in the "Minutes" of the Society for 7 May 1802, when Latrobe was present, is "Colored drawings of the Rattlesnake, exhibited by Dr. Barton, who intends 'to draw up a description of the same.'"

Two hundred years before Latrobe, Dr. Edward Tyson, an associate of Banister at Oxford[2725] best known for his illustrated classic on the anatomy of the chimpanzee [*Pan troglodytes*] and his report on the Virginia opossum, had dissected a rattlesnake from Virginia. This first accurate study of the reptile in the Repository of the Royal Society was published in 1683.[2726]

Barton's pupil Joseph Glover mentions rattlesnakes in his thesis on *Digestion in Man*, based on his professor's lectures. Glover mistakenly refers to the fifteen or twenty young

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2721 Barton papers, APS.

2722 Printed announcement at back of *Collections*, ed. 1, part 2 (1804).

2723 *Philos. Mag.* 22 (1805): 207.

2724 Carter, *Latrobe*, 1: 106–107; APS "Minutes," 323.

2725 Ewan & Ewan, *Banister*, 29.

2726 *Philos. Trans.* 12, no. 144 (1683): 25–28. Klauber, *Rattlesnakes*, 159–160.

rattlesnakes found in the stomach of an adult snake, "not in the least injured by gastric juice."[2727] Antidotes for snake venom is a subject now as then. The name "snakeroot" was already current in the late seventeenth century when Banister drew what he called "Pistolochia virginiana." This later served as the basis for the Linnaean *Aristolochia serpentaria.*[2728] By Barton's time Senega-root, as it was called, was supplanted by other supposedly efficacious remedies, particularly by two genera of the sunflower family, *Prenanthes* and *Liatris.*[2729] Another genus of that family, *Eupatorium,* was also used. On it Barton published "Some account of the success of the plant called Jestis-weed, in curing the Disease induced by the bites of the Rattlesnake and other venomous serpents," communicated by "Mr. Haynesworth."[2730] No letter or other information was found among Barton's papers.

"Jestis-weed" must be a variation of the folk name "Justice-weed" for *Eupatorium leucolepis* of the coastal plain of the Southeast.

Klauber lists twenty plant genera reputed to be cures for snake bite.[2731] Reminiscent of the ancient "doctrine of signatures" is the belief that rattleweeds with bladder-like pods with loose seeds are effective.[2732] That folk cures persist in the United States to the present is shown in references cited by Klauber.

In his address before the Philadelphia Linnaean Society in June 1807, Barton emphasized that "a complete history of the different species of Crotalus, or Rattlesnake, is a great desideratum in natural history." Among the more than twenty questions he posed was whether the rattlesnake was viviparous in all sections of the country, and whether the young take refuge "in the stomach (or oesophagus)" when in danger, and several questions about the venom; when it is most lethal, whether affected by temperature or the climate, and what is the mode of action of poison upon man.[2733]

Beginning in June 1809 Alexander Wilson published the first installment of his narrative poem *The Foresters* relating incidents on his journey of 1804 through the woods of Pennsylvania and New York.[2734] Assuredly of popular interest was Wilson's:

> *DESCRIPTION OF A RATTLESNAKE*
> *Conscious of deadly power, he seem'd to say,*
> *'Pass on; in peace let each pursue his way!'*
> *But when the uplifted musket met his view,*
> *Sudden in sounding coils his form he threw;*
> *Fierce from the centre rose his flatten'd head,*
> *With quivering tongue, and eyes of fiery red,*
> *And jaws distended vast, where threatening lay*
> *The fangs of death, in horrible array;*
> *While poised above, invisible to view,*
> *His whizzing tail in swift vibration flew.*[2735]

2727 Glover, *An Attempt to Prove that Digestion in Man depends on the united Causes of Solution and Fermentation* (Philadelphia, 1800), 35. Austin, *Imprints,* 823.

2728 Ewan & Ewan, *Banister,* 231, fig. 17. Banister's drawing, copied by Plukenet and cited by Gronovius, documented Linnaeus's proposal in 1753. Erichsen-Brown, *Use of Plants,* 359–362. [Virginia Snakeroot]

2729 Pursh, *Flora,* 2: 598 on the Rattlesnakeroot, *Prenanthes serpentaria* Pursh; and on *Liatris squarrosa,* 2: 609, known as Scaly Blazingstar or Gayfeathers.

2730 *PMPJ* 3 (1808) Pt. I: 57–61.

2731 Klauber, *Rattlesnakes,* 879–881, or ed. 2 (1972): 1159–1169. *Eryngium yuccifolium* Michx., called "Rattlesnake master," was used by the Creeks, etc.

2732 T. Jeffreys, *The Natural and Civil History of the French Dominions in North and South America* (London, 1760), cited by Klauber.

2733 Barton, *Discourse,* 24–26.

2734 *The Foresters: a poem...* (Newtown, Pa., 1818) was composed over several years while writing *American Ornithology.* Sabin, *Dictionary,* 104599.

2735 Quotation from W. M. H[etherington]'s sketch of the life of Wilson, in Alexander Wilson and Robert Jameson, *American Ornithology* (Edinburgh, 1831, 4 vols.), 1: xxxix–xl. Cantwell, *Wilson,* 127–128.

Alexander Wilson expressed his disdain for belief in fascination, that the "snake with eyes, breath, or any other known quality he possesses should be capable of drawing a bird, reluctantly, from the tree-tops to its mouth, is an absurdity too great for me to swallow."[2736]

Public fear of rattlesnakes led Rubens Peale to reassure the readers of *Poulsen's Daily Advertiser* that exhibits at the Museum presented no danger.

> *Live Rattle Snakes. The Rattle Snakes which have been living in the Museum for several years and which are still in health are now again out of their torpid state (which requires them to be unmolested during the winter) and may be seen by visitors—The two female Rattle Snakes and their 16 young ones died about Christmas, not having taken food since the 3rd of August last. N.B. The death of these snakes and their removal, inadvertently gave rise to a report that the snakes had got loose; but the public are assured that the cage is perfectly secure and that no accident of that kind has occurred for 25 years during which living Rattle Snakes have been left in the museum.*[2737]

In Barton's 1814 *Memoir concerning various Species of Serpents* he calls his first publication "a juvenile performance...sometimes rather puerile." He had stated that the season of the year when birds appeared to be "fascinated" coincided, so far as he could observe or learn by inquiry, with the period of incubation or rearing of the young. The parent bird, he now observed, sometimes with the aid of other species, attacked the besieging serpent with fluttering and uncertain motions accompanied by a plaintive distress call: thus it was "charmed." If the snake was not driven off, the old bird was sometimes killed and devoured. His revisions resulted from his own further observations, correspondence especially with William Bartram and Heckewelder, and the detailed and documented commentaries of Professors Zimmermann and Blumenbach of Germany, all distinguished naturalists.

> *Dec. 13, 1814 I have today sent to Mr.* [W. Thomas ?] *the prime copy with ms. of my paper on the Bite of the Crotalus, desiring him to reprint it. It is my design, besides notes at the bottom, to add a large mass of experiments & observations on this curious subject. The whole to be done in the same prose &c. as the late new edition of my memoir on fascination.*[2738]

Barton had concluded from his study that he had "experienced much pleasure. For the discovery of truth, at all times, has a source of pleasure." This pleasure "will even rise to something like happiness." He dedicated the revision of his *Memoir concerning the Rattle-snake* to Lacépède.

For years after Barton's time, Benjamin Silliman, editor of *American Journal of Science and Arts*, responded to reader interest on the "power of fascination," and included in his "Intelligence and Miscellanies" for the issue of June 1827, a note on the topic sent in by Alanson Nash of Williamsburg, Massachusetts. He inclined toward fascination, but had left the scene of birds alarmed by a black snake.[2739] Again Darlington attempted to correct fallacies as he had in 1808. He wrote the Editor that "fascination" is a "vulgar error," and that the excited feelings of the observer enabled him to imagine the catastrophe that was about to happen, but something always broke the charm before the narrator had completed his

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2736 *Med. Repos.* 3rd Hex. 2 (1811): 51.

2737 Poulson's *Daily Advertiser* for Friday morning 7 May 1813.

2738 Barton, miscellaneous papers, APS.

2739 "The fascination of snakes by Mr. [Alanson] Nash," *Amer. J. Sci.* 12 (1827): 368–370.

observations. Darlington protested the publishing of an "utter fallacy and delusion" in a scientific *Journal*.[2740]

Aside from serpent fascination, another curious phenomenon was posed by Edward Bancroft (1744–1821), native of Westfield, Massachusetts, who at twenty was on the Guiana Coast practicing medicine and observing plants and animals.[2741] He had provided a frontispiece to his *An Essay on the Natural History of Guiana, in South America* (London, 1769) entitled "Amphisbaena, or Double-headed Snake," and captioned below "This snake was found near Lake Champlain in America, in the year 1761, by Lieut. Moses Park. See p. 214."[2742] Bancroft reported a snake twelve inches long and that there were three kinds of two-headed snakes [*Amphisbaena*, worm snakes] in Guiana. His friendship with Joseph Priestley related to Bancroft's interest in the chemistry of dyestuffs. Evidently Barton loaned his copy of Bancroft's *Experimental Researches*[2743] to Priestley. As to the two-headed snake, Nicholas Collin considered it "may be a monstrous production," adding that two specimens had been found in New England.[2744] In 1794 there were specimens in the Yale and Peale museums.[2745]

Barton noted his visit to Peale's Museum:

> *August 9th 1805.—This day I went to Peale's museum to see the two-headed snake. It is a very small one. I have little doubt of this present year, not above 6 or 7 inches in length. It is <u>not</u> a garter-snake, but I think of the nature of the 'Speckled-Snake' (as W. Bartram called it) which I killed yesterday at Bartram's place. It is at this time shedding its skin, and has been, Peale said, ever since he got it: it came from Montgomery County. He has not seen it drink <u>with both heads</u>; but his man <u>has</u>: but not with the two heads <u>at the same time</u>. It appears to be rather legend: indeed a good deal so: Peale does not know it has <u>eaten</u> anything since he got it. He observed to me, that all the 2-headed snakes he has seen were small.*[2746]

DeWitt Clinton reported a specimen, about eight inches long, preserved in Scudders Museum in New York. It had been collected in Jamaica and presented to the Museum by Dr. Samuel Mitchill. Clinton added that Mitchill thought the snake not a *lusus naturae*, but a "regular production."[2747]

Turtles and Tortoises

On the reverse of the drawing labeled "Testudo caelata" [*Testudo caelata* (Figure 75)] in Bartram's hand is the undated description of *Clemmys insculpta* LeConte.[2748]

2740 W. D[arlington], "Protest against the admission of a power of fascination in Snakes," *Amer. J. Sci.* 13 (1828): 388–390.

2741 Bancroft was a spy for Great Britain during the Revolution. Samuel F. Bemis, *Amer. Hist. Rev.* 29 (1923): 475–478; Arthur S. MacNalty in *Sidelights on the History of Medicine*, Vincent Zachary Cope, ed. (London, 1957), 136–150.

2742 Jonathan Carver gave the story wide circulation. The specimen was given to Lord Amherst. "Whether this was a distinct species of snake, and was able to propagate its likeness, or whether it was an accidental formation, I know not." Carver, *Travels*, 323.

2743 *Experimental Researches concerning the Philosophy of permanent Colours* (London, 1794). Ewan, "Barton's library."

2744 N. Collin, *Trans. Amer. Philos. Soc.* 3 (1793): xxiii.

2745 Jeremy, *Wansey*, 72–73.

2746 Barton papers, APS.

2747 Clinton, *Discourse*, 126.

2748 [The Wood Turtle is now known as *Glyptemys insculpta* LeConte, 1830. RA. ZOOBANK.]

This beautiful tortoise figured on the other side is a Native of Pennsylvania, tho but rarely seen. (is figur'd of the size of Life) They inhabit wet Marshy places, & Drains in Meadows, on Tide-water Rivers. this was found in a wet Marshy Meadow on Schuilkill near Philadelphia. They mostly resemble the Bay or Salt water Turripen (which are caught about Delaware Bay & brought to Philadelphia Market, & sold for food, their meat being esteemed a delicacy by most people) but they are much less, nearly half their size, & of a different colour. The Back or upper Shell is flattish a little convex, composed of 36 scutellae or plates, 14 larger ones, & 22 lesser or marginal, which form a border incompassing the larger or middle plates. The Vertebre forms a prominent Keel, through the middle of the back, divided into 6 articulations as many as there are middle plates, at back joynt of these articulations is the representation of a ribband tyed in a bowknott. each of the 14 larger or middle plates, are uniformly carved in a curious & beautiful manner like altrelief, or embossed, better expressed in the drawing than to be described by words, yet in reallity absolutely inimitable by the most ingenious sculpture or artist.–

The upper Shell of a dark brown or redish brick colour. The under Shell is nearly the same colour but more variable or clouded, its surface smooth, its posterior extremity deeply cleft or forked, its anterior projects forward beyond the Upper Shell, is hollowed & truncated, somewhat cleft or emarginated–

The head of a proportionable size, the beak somewhat hooked, very strong as if designed to seize on animals for prey. the legs & feet formed as in other Turrepins or lesser water Tortoises, armed with strong sharp claws or talons. The Tail is of a moderate length gradually lessning from the base terminating in a slender point. All the Body or fleshy parts of the Animal, neck Legs & Tail, are covered with little scales. The skin being of a red or vermilion colour, there is a round or oval yellow spot on the begining of the neck behind each Eye.

These superficial remarks may seem to designate this Species from the others, but yet a more particular description might be necessary, which I shall leave for the exercise & amusement of more able & Systematick Naturalists.[2749]

Barton pursued his interests with such simultaneous fervor that a single letter to him might report on a miscellany of topics. Such was the letter from George Wilcox of Steubenville, on the Ohio River, 24 August 1807, in which he reported "I am happy in sending you with this a large specimen of the Soft shell tortoise wh I flatter myself will be more intersting than the small ones I sent before," and "I dont know how I can possibly send either a snake or a tortoise alive."[2750] The "Softshell tortoise" was probably either *Trionyx muticus* or *T. spiniferus*.[2751]

The Indian names given to animals continued to interest Barton. From a conversation with a Wyandot from Sandusky, Ohio, he noted that *Gyau-wiss* was the name for the Soft-shell turtle.[2752] He wrote Lacépède that "our Indian name" for turtle is *pi-si-li-Tul-pe*.[2753]

Peale in 1804 sent "a small box containing a small soft shelled turtle, a female, and a Crab common in the Chesapeake Bay and vicinity" in the care of Baron Humboldt–"I think myself

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2749 Barton's drawings, APS.

2750 Barton papers, HSP.

2751 [Now classified as *Apalone mutica* Lesueur and *A. spinifera* Lesueur, 1827, respectively. RA. ZOOBANK.]

2752 Barton's notes on reptiles, HSP.

2753 *Philos. Mag.* 22 (1805): 205.

fortunate in making his acquaintance," he wrote to François Marie Daudin (1774–1804), author of Zoological works.[2754]

Some unsolicited specimens came for Barton's opinion, as this memorandum records:

> *Oct. 8, 1808. This day a man brought to me, along with a number of snapping turtles, a large testudo, which he assures me came from Little-Egg-Harbor-Bay. He says it is not a Sea-tortoise, that is, it dont go out to sea, but keeps along the beach. I took it for one of the very* [same] *kind, redbellied which I have seen on the logs in the creek between Coopers & Woodbury* [New Jersey]. *But the man declares it is a different kind; & he says it dont bite, like the snappers.*[2755]

Phrynosoma cornutum, The Horned Lizard

Just as with the pronghorn and the burrowing owl, the "horned toad," really the Horned Lizard, *Phrynosoma cornutum*, was an American zoological prize of discovery. Soon after Meriwether Lewis arrived in St. Louis, he wrote to Jefferson 18 May 1804 that Pierre Chouteau of St. Louis had by way of Charles Gratiot, sent a live horned lizard found on the "Osage plains between 500 and 600 miles west of St. Louis."[2756] Though the Lewis and Clark Expedition was to see this and other species of the genus, this Chouteau specimen was the first following the description by Hernández of its Mexican counterpart. The live lizard was evidently sent to Peale by President Jefferson for exhibit—and what an armored sensation that must have been for the Museum! To handle that flat-bodied spiny creature and see the tiny drop of blood ooze from a nostril when annoyed would surely match the visitor's image of a snorting dragon! Peale wrote Jefferson that he was "greatly obliged," and that he planned to draw the lizard for the next volume of the Society's *Transactions*.[2757] A drawing labeled in Titian Peale's hand, "Drawn by C. W. Peale from a specimen brought back by Lewis and Clark," (Figure 76) may represent Chouteau's specimen rather than the one collected on the Lewis and Clark Expedition.[2758] A cord is attached to its leg as a tether. The lizard died, was eviscerated, and then drawn, not from life, but from the dried skin. This is suggested by the body-opening and the backward position of the left forearm, uncharacteristic of the living animal.[2759] The next year evidently a second lizard was delivered to Peale. On 15 December 1805 Jefferson wrote Dr. Wistar "by Mr. Wingate who goes on in a few days [I] shall send for the Society addressed to Mr. Peale a horned or rather thorny lizard, living."[2760] Twelve days later it was Barton who wrote Jefferson that the lizard had "come safe to the Philosophical Society, and is alive, in my possession...I am preparing a description with a drawing."[2761] This animal was a source of jealousy between the elder Peale and Barton. On 21 January 1806 John Vaughan, secretary of the Society, assured Jefferson that the "lacerta" was indeed still

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2754 C. W. Peale, Letterbook (1804), 95. Daudin published *Traité élémentaire et complet d'Ornothologie* (Paris, 1800, 2 vols.) and his incomplete *Histoire Naturelle des Quadrupèdes ovipares* (Paris, 1800), considered by Harper, "Herpetological nomenclature," 695–696. *Histoire* considered only frogs.

2755 Barton, "Indian materials," Archeol. Amer. miscellaneous notes, APS.

2756 Jackson, *Lewis and Clark*, 192.

2757 24 July 1804. T. R. Peale Sketchbook, APS. Jackson, *Lewis and Clark*, 411, suggests the artist may be Pietro Ancora, but C. W. Peale is more likely. This drawing may be associated with the Museum exhibition of the lizard and not with the Lewis and Clark publication.

2758 Holbrook, *Herpetology* 2: 91; and Richardson, *Peale*, 159.

2759 The suggestion of Dr. Harold Dundee, Tulane University.

2760 Jackson, *Lewis and Clark*, 277; no lizard alive or dead is mentioned in the inventory of their shipment down the river in the spring of 1805 (234–236). Jackson suggested by letter that, though unverifiable, the lizard may have been sent by Gen. Wilkinson, who loved to send "wonderful" specimens. APS *Minutes*, 380, records the lizard "from Upper Louisiana" as received from Jefferson 20 December 1805.

2761 Jackson, *Lewis and Clark*, 276.

alive, in Barton's hands, awaiting a description, and that Mr. Ancora was to draw it.[2762] Peale and Barton both treasured the novelty from the West, Peale to exhibit it, and Barton to announce it as the "horned lizard, *Lacerta tapajavin* Barton" in his *Philadelphia Medical and Physical Journal* in March 1806. He promised that a "full account of this curious animal will be published in the second part of the sixth volume of the Society's *Transactions*," adding that the lizard "is pretty well figured by Hernandez,"[2763] since he thought it the same animal, but studies prove it to be a different species. Barton engaged Christofe Rieder to draw the "spined lizard" (cf. Figure 76)[2764] for the planned article. His drawing survives in Barton's papers and is indicated as "engrav'd by A. Lawson." The ventral details of the lizard were left unfinished.

Richard Harlan in his 1825 paper on *Agama cornutum* in *Journal of the Academy of Natural Sciences* used this drawing in its finished form.[2765] John Holbrook later mentioned that the three specimens from the Peale Museum were the basis of the Harlan description.[2766] Herpetology now recognizes the horned lizard of the high plains as *Phrynosoma cornutum* Harlan, but the type is lost.[2767] When Harlan published *Agama cornutum* he mentioned that Jefferson had presented a beautiful living specimen of this animal to the Society, but made no mention of Barton's part in its history.

Fishes

"I shall name this fish Clupea Bartonia in honour of that great naturalist, Dr. Barton, formerly of Philadelphia, and whose death is an irreparable loss to the cause of Science."[2768]

Fish formed such an important source of food from the earliest days of American settlements that there had been many casual observations. John Banister about 1690 had chronicled about sixteen kinds found in the James River and tributaries, but his notes lay in the British Museum unpublished. William Bartram had commented on fish and fishing in his *Travels*, but his beautiful drawings of rock bass, copper-nosed bream, red-breasted bream, shell-bream, these in black and white, and the warmouth in color, had all been sent to his patron, John Fothergill, in England.

Fish may well have been a very early curiosity for a young man who grew up along the Conestoga River, in company with his brother Matthias, who became one of his most enthusiastic sources of information and drawings of fish. Barton may have enjoyed many a meal taken from the streams along the route to Ohio in 1785. He may have shared fish taken from the Schuylkill, while on a visit with the Bartrams.

With his notes to Pennant in 1793 Barton included descriptions of three fish, one, "Silurus,"[2769] which Sterling suggests might be flathead catfish.[2770] The specimen from the Ohio River had weighed 115 lbs., the head forty pounds. "After the head was cut off, a gentleman, from whom I received the fact, put his dog, weighing forty one pounds, in the mouth of the

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2762 Jackson, *Lewis and Clark*, 277. [The Horned Lizard is known now as *Phrynosoma cornutum* Harlan.]

2763 *PMPJ* Suppl. I (March 1806): 67–69.

2764 BSB paid Christofe Rieder $10.00 for drawing the "spined lizard." A receipt, dated 10 April 1806, is in APS Archives.

2765 *J. Acad. Nat. Sci. Philadelphia* 4 (May 1825): 299, pl. XX, but labelled "Horned Lizard, no. 134. Drawn by A. Rider."

2766 Holbrook, *Herpetology* 2: 92.

2767 W. L. Reeve in *Univ. Kansas Sci. Bull.* 34 (1952): 847, says "type unknown," which must mean the Academy specimens have been lost. If found, one should match the "A. Rider" drawing (pl. XX).

2768 DeWitt Clinton writing as Hibernicus, *Letters on the Natural History and internal Resources of the State of New York* (New York, 1822). [*Clupea* L., Herring.]

2769 [One genus, Eurasian catfish, *Silurus* L.]

2770 *Pylodictis olivaris* Raf. Sterling, *Barton's Notes*, 21–22.

fish, and pulled it through the head." "Esox osseus," probably the alligator gar,[2771] was "a strong and voracious fish extremely destructive to the small fry." He found it common in the Delaware and the Susquehanna and its branches up to the falls. It was seldom eaten by the whites, but Indians and Negroes were very fond of it. Roasted he had found it very delicious– had he eaten of it in the Indian town on Beaver Creek? "Might not the skin...be manufactured into tea-chests, knife cases, &c."[2772] "Esox" found in the Allegheny and in other waters west of the Allegheny Mountains was a species he had not seen, some other gar.[2773] Fish were to be part of his publications on zoology. Pennant had encouraged his interest. As always he sought information from visitors to the city, and from correspondents.

> *March 5, 1794. One Mr. Fox from Harrisburg informed me that the gar-fish (the same kind as the large one in Peale's museum)*[2774] *are caught in the Susquehanna river as high as Nyalusing 160 miles from Harrisburg. He said one or two sturgeons may have been seen or caught as high as Harrisburg. He mentioned one which was caught in the Juniata about six miles above its mouth...He observed that the Sturgeon (above mentioned) was caught in a fish basket and from the manner in which it laid it was evident it had come down the river (into the basket) tail-foremost.*
>
> *April 26, 1794. A few days ago B. W. Ball gave me (in writing) the following list of fishes of the Susquehanna: Salmon, pike, chub, shad, carp, trout, gars, red-horned chub, Catfish, rock, sunfish, eels, roach, White perch, Yellow perch, Old wife, & 'bill-fish,' the last I take to be the small green-gar. A few days ago Mr. Wm. Bartram said he did not think there were more than thirty distinct species of fish in the Delaware & Schuylkill. BSB.*[2775]

On his trip to northern New York in 1797 Barton recorded that "Oneida Lake abounds in fish, particularly in salmon, trout, pike, catfish, eels, chub, Fall-fish, and others." The Oneidas call salmon "Wah-hoons; Mush-quam-ma-ook of the Mohiccons." The trout, he decided, is a species of *Salmo*, "but not likely Salmo trutta or common trout." "Pike-Esox; Catfish-Silurus; the Mohiccans call it Waun-ha-uh."[2776]

Barton's "species of Salmo" was described first by S. L. Mitchill in his *On the Fishes of New York* (New York, 1814). No copy of this twenty-eight page tract has been found among Barton's books, and he may not have known of its existence. Theodore Gill of the Smithsonian Institution located only four copies, when he republished the "little work" in 1898.[2777] Gill provided a full history of this twelvemo, which has been overlooked, or confused with Mitchill's 137-page revision in 1815. Although Schoepf had published a memoir on North American fishes in 1788, he had not provided scientific names, and therefore Mitchill's is the "first attempt to give a descriptive account of North American fishes in which new genera and species were named as such." Gill judged Mitchill's "independent and positive mind, too much disposed to assume that what was not known to him was not known at all." He disposed of Mitchill's four new genera as the "fruit of ignorance and rashness and not of knowledge and deliberation." Nevertheless, Mitchill described in full paragraphs sixty-eight

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2771 The Alligator Gar *Lepisosteus spatula* Lacépède, 1803, now *Atractosteus spatula* Lacépède, 1803. [*Esox osseus* L. synonymizes to *Lepisosteus osseus* L., Longnose Gar.]

2772 Scales of giant gar were made into jewelry by Percy Viosca (1892–1961) of New Orleans.

2773 Northern long-nosed gar, *Lepisosteus osseus* L., or spotted gar, *L. oculatus* Winchell.

2774 From the year 1794 the Peale Museum exhibit may have been the paddlefish, *Polyodon spathula* Walbaum. See Sellers, *Peale's Museum*, 16.

2775 Barton correspondence, f. 147, HSP.

2776 Barton correspondence, f. 111, HSP.

2777 *Report in part of Samuel L. Mitchill, M.D. Professor of Natural History etc. on the Fishes of New York.* Edited by Theodore Gill, M.A., M.D., etc. Privately printed. (Washington, D.C., 1898). 30 pp.

nominal species of which he decided thirty-eight were new. Gill noted that "only 12 were really new." Nothing in America this detailed had been published.[2778] Barton's recognition that Oneida trout differed from the European brown trout, *Salmo trutta*, came between Schoepf's memoir and Mitchill's tract.

Hurried notes in answer to a request for observations on the fish of Monongahela, the Allegheny, and Ohio rivers came from M. Brackenridge, who wrote from Pittsburgh 28 July 1801:

> *Perch White and Yellow*
> *White—weight 27 lbs. to 1 lb.*
> *time of appearance—April 1.*
> *disappearance—July*
> *Bait—Worm and Cray fish; or when in a hurry a Minim*
> *White Perch the most plenty.*
> *Yellow. From 36 lbs. to 2 lbs. Head of one I have seen which had been cut off from the body by the ice, with gills off weigh 8 pounds. This would draw a proportion of body weighing 70 lbs. or more. Smaller do not take the bait—are taken in the seine.*
> *Bass—White and Black. Appear from April to May. Bait Minim and worm.*
> *weight—from 15 to ½ lb.*
> *Pike Weight—from 70 to 1 lb. Appearance—from Dec. to June.*
> *Bait—a Sucker, nothing else. Average weight 2 to 25 lbs.*
> *Mud Cat. Weight from 100 to ½ lb.*
> *Yellow Cat. Weight from 80 to ½ lb. Bait—guts or any garbage.*
> *Appear from February to July.*
> *Sturgeon. From 100 to ½ lb. Round Nose Sturgeon. Shovel Nose Sturgeon.*
> *Appear—same with pike. Bait—a Minim or worm.*
> *Buffalo. From 30 to 1 lb. Taken at any time. Bait—a worm.*
> *The Sucker. From 16 to ¼ lb. This is a small Fish with a head like a Buffalo.*
> *I have sent you such account of the Fish in our rivers as could be collected from the common fisherman. Yours with respect.*[2779]

A fragment laid in with an undated journal (of Barton's trip to Virginia? in 1802?), perhaps part of a class lecture, reads "I subjoin as complete a list as I have yet been able to procure of the fish of the Shenandoah. I give the names by which the fish are best known in the State of Virginia, and regret, that I am so seldom able to say with confidence what are their scientific names in the writings of Linnaeus and other naturalists."[2780] The list, however, is not there.

"The digestive power of the Pike (Esox)" was the subject of a letter from Andrew Ellicott of Lancaster in 1795, which Barton published in his *Journal*:

> *As proof of the strong digestive powers of Fish, please accept the following fact.*
> *In the month of September, last year, a Pike of about twenty pounds in weight, was taken in the Small Lake, near Le Boeuf. It was brought into the fort, and opened...the stomach contained All the bones of a squirrel's*

2778 For Benjamin H. Latrobe's writings on fishes see Charlotte M. Porter, *Arch. Nat. Hist.* 14 (1987): 85–88.

2779 Barton papers, HSP.

2780 Barton papers, APS.

head, retaining their position with respect to each other, but reduced to the state of very soft cartilege. Even the teeth, so remarkable for hardness in this animal, were in the same state. They had lost their brown colour, and were perfectly white. Philadelphia Nov. 30th 1795.[2781]

On a visit from Frederic Detlief Meyer, physician on St. Thomas Island, Barton requested a written report, this dated 12 February 1805, telling of the poisoning of one of three diners on a West Indian fish, the species not known, but not a sprat. She had eaten flesh from the belly area, while her unaffected companions had partaken of flesh nearer the tail. Barton published the letter adding his comments as "Remarks on West Indian fish," suggesting that the stomach and intestines should always be removed immediately and the fish cleaned.[2782] He felt confident that had Capt. Cook's shipmates followed this procedure, they would not have suffered from poisonous fish.[2783] This same advice, he suggested, would protect diners on pheasants that had consumed the poisonous Mountain Laurel *Kalmia latifolia*.

In his inaugural address as president of his Linnaean Society in 1807, Barton encouraged the interest and participation of members:

Ichthyology has been extremely neglected in the United States. This is the more to be regretted, because many of our fishes are peculiar to this portion of the Globe...the great lakes of North America contain not a few species which are entirely unknown to naturalists...Even a catalogue of North-American fish, designating them by their common names is a desideratum[2784]*...The existence of sea-fish in the lakes, above the cataract of Niagara, would concur with many other facts, in proving, that our continent was once covered by the ocean*[2785]*...The migration of fishes, the periods of their arrival in, and their disappearance from, our bays, our rivers, and our creeks; the times of their spawning; the coincidence of these circumstances with the leafing, or the flowering, of particular vegetables are subjects to which I would wish to direct your attention...*

Which are migratory, and which are stationary?

Are not many of the supposed migratory species residents of our waters, concealing themselves, during the colder seasons, in the mud, among the roots of vegetables, &c.? Do the two species of Sturgeon

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2781 *PMPJ* 3 (1808) Pt. I: 103.

2782 *PMPJ* 1 (1805) Pt. 2: 43–48.

2783 On James Cook's second voyage, the *Resolution* was in the New Hebrides on 24 July 1774. "Most of the officers" and others dined on what has been identified as Chinaman fish [now *Symphorus nematophorus* Bleeker or red bass, *Lutjanus coatesi* Whitley.] They "were seiz'd with Violent pains in the head and limbs" and became "dangerously ill." [Both fish accumulate the potent ciguatoxins.] Dogs and hogs fed on the fish died. See John Cawte Beaglehole, *The Journals of Captain James Cook on his Voyages of Discovery* (Cambridge, England, 1968–1974, 4 vols.), 2(1969): 469–470. Schoepf reported illness from poisonous fish on Rhode Island and in South Carolina (Schoepf, *Travels*, 2: 190–192) and also cites the event on Captain Cook's voyage.

2784 Forster, *Catalogue of the Animals*, 19–23, lists 107 cartilaginous and bony fishes, mostly with references to Catesby, Pennant, or "Mr. B," that is, Ashton Blackburne of New York, who furnished collections to his sister Anna. She had a museum in Warrington, Lancashire, the college where Forster taught languages and Priestley philosophy of science. Barton understandably overlooked this "exceedingly rare" (Wood, *Lit. Vert. Zool.*) booklet—there was not a copy in his library, and Pennant evidently had not alerted him to its existence. Barton intimates here that he had not seen Schoepf, *Reise durch einige der mittlern und südlichen Vereinigen Nordamerikanischen Staaten* (Erlangen, 1788, 2 vols.). Did his appearing in *Discourse* stimulate Mitchill to write his *On the Fishes of New York* (New York, 1814)? Mitchill had published on the anatomy and reproduction of the shark as early as 1803; and papers followed until his death in 1831.

2785 Hubbs and Lagler, *Fishes*, 4–9, reviews the zoogeography of the Great Lakes, and preglacial history.

> *(Acipenser), which inhabit the Delaware, migrate to the Sea?* Has not the Salmon (Salmo Salar), within the last one hundred years, relinquished some of the rivers in which it was observed by the first settlers of the country?*
>
> **fn. The Sturgeons of the great lakes appear to be entirely distinct from those of the rivers Hudson and Delaware*[2786]

What obstructs their passage above the falls? Is it temperature, salinity? The physiology of fishes "opens a wide and very interesting field for inquiry and discovery." Respiration is little understood, and differences in the temperatures of fishes. What of air bladder function? Is the air it contains "oxyginous gas" or "azotic gas?" Are there not minute ducts that lead immediately from the "branchias, or gills of fish into the vesica aeria?"[2787]

> *There is a vast chasm in the history of fishes; a chasm, too, in relation to what I have always deemed the most interesting part of animal natural history; I mean the instinct, or manners, or habits, of animals. How little do we know of the instincts of fishes!* [Partly because of the differences in the elements in which they live] *the best naturalists have fallen into the error, that the fishes are a stupid race of beings; that they discover very little of ingenuity; and that they are, in great measure, strangers to that storge, or powerful affection by which animals are so generally attached to their young...My own inquiries have convinced me, that we have detruded the fishes to too low a station in the scale of animal intelligence, and of storgal love. The intelligence of the fishes is manifested by numerous circumstances;...I could lay before you well-authenticated facts in regard to the solicitous care which some of our native Siluri, Labri, &c., manifest for their young...*[2788]

Brother Matthias in Lancaster had been reminded 12 October 1806:

> *I must beg that you will, at your leisure, think now and then of me, and of my Fish. Every sketch you make I greatly value. The Rock, the large Catfish, the common Eel, the most common kind of Pike, and your Roach have not yet, so far as I know, been figured. But I will not undertake to mention names. You know what Susquehannah and Conestoga fish are deemed rare. Any of them, on paper, will be acceptable to me. I will willingly relinquish them, then, for your lovers of piscine food.*[2789]

Of Matthias's drawings Barton commented:

> *My brother's drawings of fish of the river Susquehanna, and its streams (particularly the Conestoga), will, certainly, be considered as valuable accessions to the stock of American Ichthyology. It is my intention to publish engravings from these drawings, than which nothing can be more accurate. As the production of an untaught artist, who paints for his amusement, the drawings are uncommonly neat, and even elegant.*[2790]

2786 *Discourse*, 27–28.

2787 *Discourse*, 31.

2788 *Discourse*, 31–32. *Storge*, natural affection.

2789 Barton papers, APS.

2790 *Discourse*, 30 and fn.

Alas, only one drawing of a fish by Matthias remains among Barton's illustrations. What happened to the rest is a mystery. And that one drawing carries an erroneous annotation by Thomas Pennant Barton that it was the work of William Bartram! Matthias, Barton continued, had recently thrown "some light" on the generation of American eels, and *Labrus* [wrass] fishes, and had sent drawings of Susquehanna River fish.

There are three memoranda among Barton's papers on "engendering" in fishes. This first is the only dated record.

> *January 30, 1805. Mr. Turpin has been at the falls of the Roanoke, where the rock-light* [spawning] *occurs. He says it is in May, at the full of the moon. He confidently asserts that the rock fish here spoken of is the same as that in Philadelphia, &c. He says it is at the very foot of the falls that the light occurs & that the falls are 6 or 7 miles long. There is no lighting but the fish meet here for 'engendering.' He has been told that they are so numerous that a dog cant swim over on account of them. The fish do swim up these falls, which are in N. Carolina, near Halifax. His account agrees with that of Mr. Robertson. Mr. Gray who was present, says the rock-fish of Virginia (where he lives) is the same as that of Philadelphia.*

With "undiminished regard" Dr. Henry M. Gray of Jerusalem Mills, near Kingsville, Maryland, wrote to Barton 8 April 1807 of the "bedding" of chub:

> *A person in my neighborhood in whom confidence may be placed informs me that he has more than once observe*[d] *the generation of the Chub (one of the fishes I have mentioned to you). The female first deposits her eggs, usually on a log or stump of tree; the male then follows & ejects his semen over them—It is perfectly white & gives the water a turbid appearance—(He mentioned this spontaneously, without my having hinted at such a thing—This, with my knowledge of him, removes all doubt.)—I will send you a specimen of the fish, & such observations as I may make during this approaching season of their bedding as it is called here.—*[2791]

This same Dr. Gray, once one of his "ingenious pupils," also told him of his observation of a viviparous fish with birth in an "unfinished or embryo-like state," and gave him valuable facts on the generation of eels. Matthias Barton had confirmed viviparous birth. On one of Barton's journeys, while in Hanover, he noted that "Mr. Bethere pointed out to me, in the Susquehanna several considerable piles of pebbles: these, he assured me, are the spawning places of the sun-fish. They have been seen, by the people, conveying pebbles in their mouths to those spots: the spawn is deposited among the pebbles."[2792]

In a long and newsy letter on varied topics, such as soft-shelled turtles, castor beans, and goiter, George Wilcox wrote from Steubenville, Ohio, 24 August 1807:

> *I also wrote you that Shad or herring was never caught here. I was misinformed. I have the satisfaction to tell you that I saw the great number of herring and two shad last spring caught in the Ohio (perhaps the uncommonly high water caused them to come up) at this place. An old Jersey fisherman and many others here agree with me that it is the same*

2791 Nest building in freshwater fishes, including Creek Chub, *Semotilus atromaculatus* Mitchill, and River Chub, is discussed by Karl F. Lagler, John E. Bardach & Robert R. Miller, *Ichthyology* (New York, 1962), 295.

2792 Barton, miscellaneous papers, APS.

kind as those caught in the Delaware. My father in law has seen them high up in the Monongahela.[2793]

An answer to the perennial biogeographic puzzle of how species suddenly appear in unexpected places was suggested by Swammerdam in the seventeenth century, and Barton in his browsing came across the answer: "eggs of some kinds of fishes sticking to the wings of Ducks."[2794] Thus fish, insects, and others may replenish high mountain lakes. Barton did not own a copy of Jan Swammerdam, but John Vaughan possessed a copy that he presented to the American Philosophical Society, and Barton certainly took advantage of it.

It may have been Humboldt's visit to Philadelphia in 1804 that riveted Barton's attention toward the electric eel. Although no mention among Barton's papers refers to conversations with Humboldt or to Humboldt's experience with the *tembladores* at Calabozo "in the midst of the llanos" on a tributary of the Orinoco,[2795] discussion of the "phenomena of galvanic electricity" may well have been raised between them. Humboldt had measured "eels five feet long or more." Barton noted reports from other sources: on the electric eel of Surinam, whose shock was found "greatly to surpass the torpedo," the electric catfish of Africa. That an electric response obtained in two unrelated fishes of wholly different bodily features attracted comment. Barton compared characteristics of the nervous system in different vertebrates as he pursued the line of authors from 1666 who had contributed to the knowledge of the phenomena.[2796]

Edward Bancroft (1744–1820), friend of Franklin, Lettsom, and Priestley, had discussed "torporific fish" in British Guiana[2797] a century after Jean Richer (c. 1696) had taken time away from his astronomical observations in Cayenne to report on the strange "eel." Five electric eels brought to Charleston from Surinam in 1774 were seen by Alexander Garden[2798] and were sent by him to John Ellis in London. Ellis then submitted for publication "An account of Gymnotus electricus."[2799] More immediately Charles Caldwell translated Johann Friedrich Blumenbach's *Elements of Physiology* (Philadelphia, 1795).[2800] A short appendix on animal electricity called attention to the topic in Barton's classes. Blumenbach's interest in the races of man, crania, and behavior, also had a like appeal to Barton.[2801]

All this led Barton to think back to conversations with his uncle, and to a manuscript. "Experiments on the Gymnotus Electricus or Electric eel, made at Philadelphia about the year 1770, by the late Mr. Rittenhouse, Mr. E. Kimmersley, and some other gentlemen," was "Communicated to the Editor" by Mr. Rittenhouse, and published in *Philadelphia Medical and Physical Journal*. Altogether fourteen experiments, and "several others" were performed by one, or eight to ten persons, either by touching the fish with one or both hands, all in a

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2793 Barton papers, APS.

2794 Jay Swammerdam (1637–1680), *Book of Nature translated...by Thomas F. Lloyd* (London, 1758), 103.

2795 Alexander von Humboldt, *Personal Narrative of Travels...translated into English by Helen Maria Williams* (London, 1814–1826, 7 vols.) vol. 4 (1819): 344–397.

2796 *PMPJ* 1 (1805) Pt. 2: 96–100; "Continuation," 159–161.

2797 Edward Bancroft, *An Essay on the Natural History of Guiana, in South America* (London, 1769), 190–201.

2798 Berkeley & Berkeley, *Garden*, 258–259.

2799 It followed Hugh Williamson, "Experiments and Observations on the *Gymnotus electricus* or electrical eel," *Phil. Trans.* 65 (1775): 94–101, "An account...by Alexander Garden," 102–110. *Electrophorus electricus*, as now known, is associated with the Amazonian palm, genus *Euterpe*. See Michael Goulding, *Fishes and the Forest, explorations in Amazonian natural history* (Berkeley & London, 1980), 94.

2800 Caldwell details his six months' task of translating from the Latin as a "somewhat protracted but pleasant amusement." Prompt negotiations were made with Dobson, it is hinted, to deter another translator—Barton? Caldwell, *Autobiography*, 196–199.

2801 N. B. Marshall, ichthyologist at the Natural History Museum, London, has discussed electroreceptive responses in six different groups of fishes, not merely the two mentioned by Barton, the Torpedo ray (Torpedinidae) and the Electric Eel (*Electrophorus electricus*), but also a Skate (Rajidae), Stargazer (*Astroscopus*), Electric Catfish (*Malapterurus electricus*) J. F. Gmelin, 1789, and the Gymnotid electric fish (*Hypopomus artedi*) Kaup, 1876. N. B. Marshall, *Explorations in the Life of Fishes* (Cambridge, Mass., 1971), 108–112.

circle joining hands with one another, the end persons touching the fish, or with chains held within the group, or with non-conductors. A living fish that was introduced into the eel's tank was stunned on coming close. Barton promised "additional observations," an historical overview of the "progress of discovery relative to this and to other species of fishes, capable of exerting the same wonderful influence, whether that influence be *Electrical* or *Galvanic*."[2802]

Finding a suitable yet inexpensive way of preserving fish specimens was perhaps stimulated by Pennant, who had requested information for additions to his account of the fish of the Susquehanna. Peck had tried pressing and drying them in the manner of plant specimens, when he was a senior at Harvard.[2803] Charles Willson Peale wrote to Presley Neville 5 August 1804 that he was going to preserve all specimens coming to the New York fish market, then to extend the work "to all parts of the United States."[2804] Barton may have heard of drying fish like plant specimens from Professor Walker at Edinburgh during his student days there. Walker in 1786 had purchased Alexander Weir's Museum for two hundred ten pounds, and credited Weir with this method of preparation.[2805] Barton wrote to a former student of Walker, the Edinburgh printer, Charles Stewart,[2806] for information on this method of drying fish, at the same time giving him an account of his activities:

> *Philadelphia 23 July 1804*
>
> *Dear Sir:*
>
> *Within the last six months, I have written to you three different letters, some of which, at least I hope you have received. In my last, I particularly requested you to be so kind as to inform me of Mr. Weir's method of pressing fish to be kept, like dried plants, when taken. Dr. Walker I well remember, spoke of the method as being well adapted to answer the purpose.*
>
> *Our lakes and remote rivers contain many undescribed species of fish. I have much difficulty in procuring specimens of these, for the want of a good, easy method of preserving them. If Wier's method answers as well as I have been led to believe it will, I shall have little difficulty in obtaining many of the fishes of the waters I allude to.*
>
> *Within the last 7 years, I have made two extensive journeys through different (some of them pretty remote) parts of the United States. The results of my inquiries will be communicated to the public in different works in which I am engaged. My Flora of the middle states advances rapidly.*
>
> *I shall, in all probability, take another journey, this summer, as my health, which has been greatly impaired for several years, still continues very delicate: and the recovery of my health has been the original object of my former tours...Hoping to have the pleasure of receiving a line from you I remain, My dear Sir, Your sincere friend, &c, B. S. Barton*[2807]

2802 *PMPJ* 1 (1805) Pt. 2: 96-200 and "Continuation," 159-161. "*Electrical*" or *Faradic*.

2803 Smallwood, *American Mind* 302.

2804 Peale papers, APS. Sellers, *Peale's Museum*, 347 fn. 9.

2805 Walker papers, La III 352/2 ff. 4, UELA. Francis Gordon Gardenstone (1771-1793) in his *Travelling Memorandums...* (Edinburgh, 1792) described the contents of Weir's Museum, adjacent to No. 10 Princes Street. "One cannot help...admiring the birds from Port Jackson, New South Wales, for the extreme beauty of their plumage, their appearance otherwise exhibits them as not deprived of life." Weir was a "most ingenious man, and certainly has not hitherto been so much encouraged by the public as his merit deserves," so wrote the principal, Alexander Grant in his *The Story of the University of Edinburgh during its first Three Hundred Years* (London, 1884, 2 vols.), 2: 122. *DNB*. Even a mention of Weir's Museum is wanting from modern expected sources.

2806 Charles Stewart (fl. 1782-1824) was one-time Secretary of the Natural History Society of Edinburgh.

2807 Barton papers, APS. His copy.

If Stewart answered, his letter is no longer with Barton's papers.

Writing to Lacépède, the letter published in 1805, Barton inquired of that naturalist's progress in his work on fishes and announced his own:

> *I should, indeed, have been very glad if my leisure had permitted me to have transcribed for your use a very considerable number of facts relative to the fishes of North America, especially of the United States. These facts will, however, be published in two works in which I am engaged, viz, my Fragments of the Natural History of Pennsylvania and my Travels through various parts of the United States.*

He referred to his intended "Fragments Part II," and the publication of his travel Journals of 1785, 1797, 1802, and 1805, all incomplete, which, except for 1802,[2808] remain in manuscript. Yet Barton continued to collect material.

Over the years Barton had lectured to his natural history classes on what he knew of the local fishes. His philosophy on the importance of the subject he gave in his *Discourse* to prospective physicians-naturalists. On 15 February 1811 he read before the American Philosophical Society a paper on the "Generation of fishes, to be left with the Society hereafter," but we have not located the manuscript.[2809]

Was it in response to a chance meeting of a local citizen and a verbal request for more data that Barton received the following from M. F. Simpson?

> *Doct. Barton*
> *No. 6 So. third St.*
> *June 24 1814*
>
> *Dear Sir*
>
> *I annex for your perusal some notes on the history of ye fish of ye Susquehanna R. Am sorry I am not so versed in ye subject as to have made it more satisfactory to you relying on your usual indulgence for the allowance necessary, arising out of my want or inaccuracy I am with great respect Your most obt. obliged friend M. F. Simpson*
>
> *Shad are taken in the Susquehanna River as soon as the snow waters have run down. The season governs–I have known fishing to commence the 17th March, after a mild winter, little snow, and when spring open'd very early; and it is delayed by the snow waters some seasons till 10th of May–during cooler seasons they continue good till 1st & continuing 10–15th June.*
>
> *They ascend to the highest waters to deposit their spawn–and in June-July & sometimes in August they are seen returning–but in a soft reduced & often deranged state, frequently running on shore, or against rocks or craft, evincing by their near approach to the surface a frequent wheeling, & dashing a total deprivation of the sagacity shown in their ascent–it being rarely the case that they are seen in their ascent tho' they move in immense schools–being esteemed the shyest fish.*
>
> *Opinions vary much as to the time they are maturing–They spawn being deposited in May & June–The young descend in the autumn when millions are destroyed by the pounds & baskets (prepared to take Eels &c.) and reach the tide in Novmr., when from 2 to 4 inches in length, many say they arrive at maturity by the next spring when the[y] reascend:–others that*

2808 McAtee, "Journal."

2809 APS, "Minutes," 427.

they remain during the performance of a circuit by Cape Florida Spanish Main, & to the colder regions from whence ye return by Iceland coast of Scotland, Newfoundland & not ascending the fresh waters till prepared to deposit ye young—always accompanied by the mail, and sometimes led on, or preceded by a s[c]hool, or run of males, not of ye largest size. The largest & finest are taken higher up the waters—It would appear that minor in vigor & size, as also grow fatter as ye ascend—Those taken in the Chesapeak being deemed much inferior to those caught in the north East branch and even at the distance of 80 miles above tide. They vary in weight from two to nine lbs.—4 lbs is esteemed a fair average—

The Eel is steemed a useful fish and are taken in the Autumn in large quantities, in pounds, and traps, and with ye hook, partially throughout the year, are rich and never much out of season.—The Cat fish bearing an affinity to the Eel in flavour and texture of surface & flesh, but not in form, are also natives of this River, and abound most in the spring, being quite stationary—taken by ye hook.—

The Salmon are a fine scale fish, and in highest season in the Autumn taken by the hook & line—are stationary—the flesh is coarse and firm, and esteemed much—and superior to ye Rock, which are striped and esteemed for boiling—They descend in shoals in the Autumn and are taken in the ponds with ye Eel. weighing 2 to 16 lbs. sometimes taken larger.—The Sun fish, are short broad & flat, of dark golden hue, a good pan fish—local, remaining in little families under rocks & in edies, weighing about 1 lb. or 1¼ when full grown. The Chubb or fall fish are taken with the hook & in considerable numbers in the Autumn—not much esteemed, being devoid of richness—when full grown are about 12 inches in length being about 2 or—

The Mullet & Sucker, are numerous but not much esteemed, when at maturity weigh two or three pounds.[2810]

While preparing for his trip to Europe in 1815 Barton requested live trout specimens from Heckewelder in Bethlehem who obliged on 29 March.[2811] In England that summer Barton was still pursuing information on fishes and adding to his library. He requested William Elford Leach of the British Museum to obtain the five volume *Natural History of British Fishes* (London, 1802-1808) by Edward Donovan (1768-1837), which evidently cost more "because of its scarcity" than Barton had expected to pay.[2812] Barton had offered to send crabs to Leach in return, but here fate stepped in: Barton died before that mission was completed.

2810 Barton, miscellaneous papers, Zoological notes, #3, APS.
2811 Barton papers, APS.
2812 Barton papers, APS.

Chapter XXIV

Birds

Barton's letter to Lacépède in 1805 dealing with the "Natural History of North America" emphasized the richness of the field, and especially his plans for a study of animal instincts, the "mores" of birds.

> *Our country, as you know, is very rich in birds. A considerable number of these have been described, or mentioned, by Buffon, Pennant, and other writers. But the ornithology of the North American continent is very imperfectly understood. Many of our birds have never been correctly, if at all, described. Some of these undescribed species are large birds; such as a species of plotus, called in Carolina the snake-bird; not to mention others. But it is a matter of more consequence to study the manners of those birds that have already been discovered, than merely to detect new species. I flatter myself that I have made considerable progress in the study of the mores of our birds. I have been particularly attentive to their instincts as we call them, and have even digested my collection of facts on this subject into order. These facts will form a part of a large work on the Instinct of Animals.*[2813]

From early days in Lancaster and walks through the woods with his father in the vicinity of Conestoga Manor, and on his expedition to western Pennsylvania and eastern Ohio with his uncle David Rittenhouse, young Barton was attracted to the rich bird fauna. When he moved to Philadelphia, this interest was further fostered by his visits with William Bartram, a fountain of information.[2814] On 22 April 1791 Barton wrote, "pray do not omit noticing of the passage of our birds."[2815] Again on 19 October, after a list of plants he wished information on, he reminded Bartram of his wish for these observations. "I am very anxious to see your journal complete. May I also request that you will let me know in what manner I can make some return for all your favours."[2816] Although Barton pressed William to publish his journal, he soon learned that Bartram did not have the innate inclination to ready his material, and so he incorporated Bartram's observations with his own in a chart made from 1 March 1791–28 February 1792, as part of *Fragments*. Most of Barton's observations were before the appearance of Bartram's *Travels* in late August 1791, and possibly before Barton had access to Bartram's manuscript journal. Barton used Linnaean names from Gmelin, *Caroli a Linne Systema Naturae*, ed. 13 (Leipzig, 1788–1793) designated "(G)"; a Catesby reference; and four of his own names designated "(mihi)." In the chart he listed one hundred spring and summer birds, and thirty-nine autumnal and winter birds.

In the Introduction to *Fragments* Barton observed that the woodcock commonly visited Pennsylvania when the American elm was in blossom—"that is between the 8th and 18th of March." The pewee, one of the earliest "Spring birds of passage," he found, visited the

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2813 *Philos. Mag.* 22 (1805): 204. [*Plotus anhinga* L., now *Anhinga anhinga* L.]

2814 "Some early American Ornithologists. Wm. Bartram," *Bird Lore* 7 (1905): 162–164; Witmer Stone, "Bird migration records of Wm. Bartram, 1802–1812," *Auk* 2 (1913): 325–358. pl. 9–11. portr.

2815 Bartram papers, HSP.

2816 Gilbert collection, 1: 99. CPSP.

neighborhood of Philadelphia about the middle of March and could be considered as "the signal for commencing certain agricultural operations" since "we have seldom hard frosts after the arrival of this bird, which seems to give a pretty confident assurance to the farmer, that he may soon begin to open the ground and plant. It is an old observation in Pennsylvania, that when the Whip-poor-will[2817] arrives, it is time to go barefooted...Some of our Indians believe, that this bird is a messenger sent to call attention to the planting of the ground."[2818]

Dividing his chart in *Fragments* into columns, he gave the date of observation; the Latin, British and American common names; the "progress of Vegetation"; and miscellaneous observations such as insect visitations, the arrival of fish, temperatures. The name "Fringilla pinus (mihi)," now *Cardualis pinus*, the pine siskin, accepted by the American Ornithologists' Union, was published with a description by Wilson eleven years later.

Some other Barton names in the chart were "Certhia floridana (mihi) Great Yellow Throated Wren of Florida," which appeared in Bartram's *Travels*, as *Motacilla carolinensis*; "Certhia familiaris (mihi), House-Wren, Sociable Wren," and by Bartram, *Motacilla domestica*; "Fringilla exilis (mihi), lesser Finch," perhaps the gold-finch; "Fringilla pinus (mihi)," no common name, but perhaps the purple finch, *Fringilla purpurea* of Bartram; "Fringilla domestica (mihi), Little Sparrow (Titt, Chipping Sparrow)," *Passer domesticus* [European House Sparrow]; and "Strix diurnalis (mihi), Sharp-Winged Day Owl," and "*Strix peregrinator*," the sharp winged owl, of Bartram.

Bartram names that appear to have been added to Barton's chart after the appearance of *Travels* were "Colymbus migratorius, Eel Crow" [*Phalacrocorax auritus*, Double-crested Cormorant]; "Passer [*Cistothorus*] palustris, the Reed [Marsh Wren] sparrow"; "Anas subcaerulea, The Blue-Bill"; "Muscicapa rapax, Olive-sided Flycatcher [now *Contopus cooperi*], or Lesser pewe" [Contopus virens]; and "Ardea parva, the Little Striped Bittern [the Least Bittern, *Ixobrychus exilis*]." The only Bartram name not from *Travels* was *Muscicapa subfusca*, no common name given.

Since Alexander Wilson, and George Ord, claimed that Barton merely used Bartram's knowledge and had not made observations on his own, W. W. Cooke made a comparison of dates given in Bartram's catalog and in Barton's *Fragments*.[2819] In only one date of arrival of migrating birds do they agree. In seven cases Bartram's are later than Barton's by one to nine days; in seven cases earlier by two to seven days. We cannot agree with Francis Harper that Barton wholly depended on Bartram for his data on birds, and that he did not acknowledge what he took from Bartram. In his Introduction and supplementary sections Barton acknowledged Bartram fifty-four times.

Wilson over the years tempered his feelings about Barton, and so in *American Ornithology* (1812) 5: 81, he wrote of "two of the most distinguished naturalists, William Bartram and Benjamin Smith Barton."

The Introduction and Appendix to *Fragments* was written, it appears, sometime after the chart, and in preparation for publication. In 1792 and 1793 Barton also turned his attention to recording information on animals for his revered correspondent, Thomas Pennant, but over the years he continued to collect information on birds. In the introduction to its thirty-nine sections of *Fragments*, Barton recorded that he had "sometimes made use of the scientific names of my ingenious good friend, Mr. William Bartram, a gentleman who has contributed much to our knowledge of the natural productions of North America." The *Fragments* is replete with cited quotations from the *Travels*. "Professor Gmelin, the laborious, and often successful, editor of the new edition of the *Systema Naturae*...my ever venerated maternal

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2817 [*Caprimulgus vociferus* Wilson, 1812. AOU. ITIS.]

2818 *Fragments*, xi. Dr. John Vaughan and Mr. Robert Millican, both of Wilmington, Delaware, on 12 June 1805 sent Barton notes on the courtship of the Woodcock. Vaughan referred to Buffon's connecting organs of generation with the voice, "and that the delightful harmony of the grove, so much admired by man, is the natural expression of their love." Millican gave a detailed description of the courtship flight. *PMPJ* 2 (1805) Pt. I: 68-70.

2819 W. W. Cooke in *Cassinia* (1912), quoted by Witmer Stone in *Auk* 30 (1913): 357.

uncle, the late David Rittenhouse, Esq. ...my excellent friend Mr. Pennant," such were his acknowledgements.

His text from pp. 11–14 is divided into sections of resident and occasional birds, then his Appendix contains "Observations on the greater numbers of the Birds, which are mentioned in the preceding Tables," these mostly made up of notes gathered after the records of 1791 in the Tables. He has had access now, not only to Bartram's manuscript journal, but to his *Travels*, which appeared late August, 1791, both of which he cites frequently.[2820]

It is unfortunate that Barton did not elect to follow the descriptive catalog of 215 birds that Bartram offered in his *Travels* (289–296). Had he done so, Bartram's part in cataloging and naming the birds of eastern North America would have been fairly acknowledged, and if Barton had supplied descriptions for his own new names, he would have received greater acknowledgement. Bartram's "Description of an American species of Certhia, or creeper," with a drawing by Anne Bartram supplied no specific name although Barton added a note that the bird seemed nearly allied to *Certhia familiaris*, the European creeper of Pennant. Barton may have been attempting to correct a typographical error in *Travels* when he included both "Certhia rufa" of *Travels*, and "Certhia fusca" of Bartram MS. for the brown creeper. In introducing a new name, "Certhia familiaris (mihi)" for his creeper, Barton further involved the nomenclature.[2821]

Bartram's bird names were often confusing because of his inconsistent use of binomials in *Travels*. Barton further confused identifications by often adopting Bartram's varying manuscript names in *Fragments*. For example, Bartram called the northern barred owl "Strix acclamator" in *Travels*, but Barton in Section III accepted "Strix varius of Bartram. Manuscript Hen Owl. This is a large species without ears. It is next in size to the Strix virginiana, or Great Horned Owl." Barton is granted authorship today of the barred owl, *Strix varius*, since he published the name with his short description.[2822] Harper, Bartram scholar, however, insists on *Strix acclamator* Bartram since it dates from *Travels* (1791), 289.[2823]

Barton devotes his longest account to the purple martin, "Hirundo purpurea, *Pons-pau-cloo-moose*, or 'the bird that never rests,' of the Mohegan-Indians,"[2824] which with the swallows he knows are migratory. "As a devourer of pernicious insects, one of the most useful birds with which I am acquainted is the House-wren." Mindful of the need for control of pernicious insects, he suggests that as "Fragments profess to contain some useful observations, I think this is a proper place to observe, that many of the birds of Pennsylvania, and other parts of the United-States, are so extremely useful to man, by destroying insects and reptiles of various kinds, that they ought studiously to be preserved, if not by Laws, at least by the Good-Sense, of the country." In 1801 he was led to publish his article "On the Utility of Birds." Barton and Bartram were early conservationists.

Before the year 1799 was out Barton revised the *Fragments*. According to a letter laid in the John Lewis Childs copy in the National Museum of Natural History, Washington, Charles W. Richmond on 14 May 1923 wrote that the revised edition was more valuable to naturalists. For example, in the first issue, dated 18 April 1799, "Certhia familiaris (mihi)" (p. 11) is

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2820 On 29 December 1792 Bartram sent information on the Water-turkey (*Anhinga*), Passenger Pigeon, Red-headed Woodpecker, Cedar Waxwing, Robin, Bluebird, Golden-crowned and Ruby-crowned Kinglets, Myrtle Warbler, Brown Creeper, and Sparrow Hawk [*Accipiter nisus*]. Barton papers, APS.

2821 *PMPJ* 1 (1805) Pt. 2: 103–106. Anne Bartram's drawing clearly shows her Uncle William's influence. This creeper, an "autumnal bird of passage" arrived in Philadelphia about October, wintered as far south as Carolina and Florida, but Bartram has not heard of their breeding in Pennsylvania, although they may in the northern part of the state. They live in woods or high forests, where "we see them climbing up, and running about, the trunks of large trees, searching the crevices of the bark for spiders and other insects...their slender, crooked bill is well developed. They utter a feeble, chirping noise."

2822 Barred Owl, *Strix varia* Barton, AOU, 302. [Great Horned Owl, *Strix virginiana* Wilson, 1828, is accepted today as *Bubo virginianus* J. F. Gmelin, 1788. AOU. ZOOBANK.]

2823 F. Harper, *Proc. Rochester Acad. Sci.* 9 (1942): 211.

2824 [Now *Progne subis* L., 1758. AOU.]

without description.[2825] In the second issue it is called *Certhia fusca* with a description, and there are many other changes on that page. The Willughby Society edition (1883)[2826] may have been taken from the revised issue. Richmond says he had not seen this issue and presumes it is much rarer than the others. Childs's copy was listed in *Catalogue of the North American Natural History Library of J. L. Childs* (New York, 1917), 105. We have had access to the first edition.

Correspondence between the two bird enthusiasts continued. Bartram wrote 25 December 1792:

> *This day vast Flights of Pigeons are feeding on Acorns in the Woods, they were observed 2 or 3 days past in great Flocks, So. their course N.E. Red head Woodpecker (Pic*[us] *Erythrocephalus*[2827]*) We see, & Flocks of Ampelis, (Cedar Bird* [2828]*) every day. They visit us now to partake of thy favourite fruite Diospyros, as do Robins, T*[urdus]*. migratorius. They & Rubicola americana*[2829] *entertain us every morning with their greatful benevolent songs, as in the Spring Season; Regulus crestatus,*[2830] *& Ruby crown wren,*[2831] *Parus uropygeoflavo*[2832] *Certhia rufa,*[2833] *Falc*[o]*. sparverius,*[2834] *& some other winged Guests from the North, appear in the Trees in the Garden every day.*
>
> *The wild Pigeon (Columba migratoria) returning from the So. at this season, and the Red Head Woodpecker staying so long with us, seem to indicate a mild winter.*[2835]

Few of these specific names appear in *Fragments*. In preparation Barton had searched many printed records, had talked not only with Bartram, but with farmers, visitors, and had written to Heckewelder and to former pupils. He had ransacked Jefferson's *Notes on the State of Virginia* (London, 1787), Pennant's *Arctic Zoology* (London, 1783–1784, 2 vols.), and Latham's *A General Synopsis of Birds* (London, 1781–1785, 3 vols.), finding that they had increased the number of species by failing to distinguish the differences in sexes; George Edwards's *Gleanings of Natural History* (London, 1758, 1760, 1764, 3 vols.), disagreeing with Edwards that birds never returned in migration the way they had arrived; and Dr. Adam Ferguson, who had claimed that birds acted only on instinct, and not as Barton believed also on volition, since their arrival dates varied according to the season "and other circumstances," which included the flowering and fruiting of plant species and the clearing of lands. He collected references from John Lawson's *Natural History of Carolina* (London, 1714), 142, Rochefort's *Histoire Naturelle et Morales des Îles Antilles de l'Amérique* (Lyon, 1658) (I 1 p. xx), and he also quoted Columella, Dante, Fabricius, and Erasmus Darwin, among others. He noticed that some birds that were summer residents in Pennsylvania were also accounted for by Hernandez in Mexico, and Piso and Marcgrave as far south as Brazil, and that some were common both to Europe and America. He also credited high winds with bringing in strays from across the ocean. He concluded his Introduction:

2825 *Certhia familiaris* L. refers to the Eurasian Creeper. Its American counterpart is *Certhia americana* Bonaparte in AOU, 520. First issue of *Fragments* at APS; second, at Smithsonian Institution.

2826 See Appendix I, Bibliography of Barton's Writings, no. 177.

2827 [*Melanerpes erythrocephalus* L. AOU. AUD.]

2828 [Cedar Waxwing, *Bombycilla cedorum* Viellot, with Wilson's *Ampelis americana* a synonym. AOU. ZOOBANK.]

2829 Bluebird. [*Sialia sialia* L. AOU. AUD.]

2830 Golden crowned kinglet. [*Regulus satrapa* Lichtenstein. AOU. AUD.]

2831 Ruby crowned kinglet. [*Regulus calendula* L. AOU. AUD.]

2832 Myrtle, or Yellow-rumped, warbler. [*Dendroica coronata* L. AOU. AUD.]

2833 Brown creeper. [*Certhia americana* Bonaparte. AOU. AUD.]

2834 American Kestrel.

2835 Barton papers, APS. Linnaeus described the passenger pigeon as *Ectopistes migratorius*, now extinct.

> *I am not afraid, that genuine naturalists will suppose, that the regularity of migration, which I have mentioned, between the two continents, is altogether imaginary. I certainly do not carry my birds as far, in search of food, of resting places, and of better climes, as did Cotton Mather, of New England, who fancied that the Wild-Pigeons, on leaving us, repaired 'to some undiscovered Satellite, accompanying the Earth at a near Distance.'*

Barton's literary aviary stressed such American exhibits as the wild turkey, the snake bird, crying bird, and the hummingbird. Of particular interest was the Carolina "parokeet"[2836] [parakeet], his curiosity lasting after the publication of *Fragments*. Barton queried "John Heckewelder, Postmaster, at Gnadenhutten, State of Ohio, viz Zanesville": "Do the parokeets stay all winter in Ohio State? Do they breed with you? Any information on this subject I will be glad to receive." Heckewelder responded in 1792, adding that he had found the "music of the parokeets near the mouth of the Wabash on the Ohio too loud and not attuned to my ears." At "Buffalo Salt Lick," that is French Lick, Indiana, where "as people say" five hundred buffalo may be seen at one time, "many hundreds" of parakeets "made a terrible noise."[2837] On the word of Judge Egbert Benson of New York Barton reported in *Fragments* (vi) that "A very large flight of parakeets, which came from the westward, was seen a few years ago, about twenty five miles to the north-west of Albany...in the depth of winter." The more ignorant Dutch settlers imagined the end of the world was portended.

Barton made himself a memo after publication of *Fragments* that the parrots of America are much greater voyagers than many suppose, "they sail far beyond the tropics," and:

> ***January 18, 1805.*** *Mr. Johnston, student of medicine, informed me that at Chillicothee (n. side of Ohio) where he resides, Parakeets are very common. He assures me that they winter all year—He has never heard of their becoming torpid—March 12, 1805. Mr. Felix Robertson informed me that he has never heard that the Parakeets breed in Tennessee; but he thinks they are there in winter-time...*
>
> *Major Denny informed me, that Parakeets are seen at Fort Washington very frequently. He thinks they remain there the whole year round.*
>
> ***March 11, 1805.*** *W. Bartram informed me, that he never saw Parakeets to the north of Cape-Fear,—He says, there is a notion to the southward, as in the Carolinas, &c. that the Parakeets, in the winter-time, become torpid,—He has never, however, had sufficient proof of this fact, and I think he did not seem inclined to credit it.*
>
> ***June 6, 1805.*** *W. Bartram says...they breed in the holes of trees, like woodpeckers.*[2838]

Mrs. B. Robertson on Nashville, Tennessee, answered a request 25 April 1805, writing that she knew one species only. They are present at all times of the year, and they "feed on many different substances, as hackberries, mulberries, huckleberries, apples, &c but I have never known them to feed on any kind of acorn. They lay their eggs in hollow trees, and they also roost at night in the hollow of trees, great numbers of them together."[2839] Felix Robertson, former pupil, had initialed the letter. Barton summarized for European readers what he had learned from his correspondents about the parakeet: "They are frequently found in immense

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2836 [*Conuropsis carolinensis* L., the Carolina Parakeet, referred to by Barton as a "parakeet," now extinct. AOU.]

2837 Gilbert collection, 1: 141. CPSP; Wallace, *Heckewelder*, 279, 284.

2838 Barton papers, "Miscellaneous Facts," HSP.

2839 Barton correspondence, HSP.

flocks upon the river Ohio as high as the latitude of 40 degrees: nay, a very large flight of these birds has been seen, on the eastern side of the United States, as high as latitude 42 degrees."[2840] A biogeographer at heart, Barton sought to determine the limits of the range of the parakeet as for other animals and plants. He had noticed the different patterns of distribution for hickories on opposite sides of the Appalachians and had commented to Humboldt on that observation. Now from his collected notes he knew that the parakeet ranged further north in larger flocks west of the mountains. Yet he still sought confirmation. Barton queried Richard Peters Barton 26 March 1808, "Do Parrakeats winter in any part of Tennessee? Is there more than one kind of this bird? If they winter, do they become torpid in the winter?" Richard replied that they did winter, but it was supposed they did not become torpid, and there was only one kind.[2841]

The best known of the rails, the Sora,[2842] sometimes abundant and always popular with sportsmen, was reported on by Henry M. Gray of Jerusalem [Jerusalem Mills] 8 April 1807. He alluded again to the myth of hibernation in the marsh when he wrote:

> *As the season for Sora was over before I got your letter, I can only give you such information as I could obtain from persons who have been in the habit of shooting them—I myself have never seen the bird but once, several years ago—They arrive here (this is below us on the Salt) about the 20th August, & disappear entirely with the first frost—It is the vulgar opinion that they are changed into frogs (This opinion also is held of Emb*[eriza] *Hyemalis.) I am assured by gentlemen, that only one day previous to their disappearance they seem to be unable to fly more than 100 or 150 yds before they sink apparently exhausted with fatigue—It is this circumstance, I suppose, which has led to the opinion above mentioned—I shall pay attention to the matter at the proper season & send you one of the birds—*
>
> *I am totally unacquainted with your Reid-bird.*[2843]

Gray's reference to "Emberiza hyemalis"[2844] was likely intended for the snow bunting, a winter visitor about which Alexander Wilson wrote. Gray's postscript "Reid-bird" referred to the "reed-bird" or bobolink,[2845] drawn by Catesby (*Natural History*, plate 14), associated with the rice fields in the fall, and for that reason named *Dolichonyx oryzivorus* [by Linnaeus in 1758].

Barton's notes "Of esculent nests" reflects his antiquarian interests. He quoted the short account of edible bird nests in Athanasius Kircher (1602-1680), *China Illustrata* (Amsterdam, 1667).[2846] Barton may have learned of this Jesuit's writings from reading Willughby, *Ornithology*, where "the Chinese Swallow of Bontius, whose nest is edible" is set forth. Willughby retells Bontius's account:

> *A sort of small particuloured birds, of the shape of swallow at a certain season of the year, viz. their breeding time, come out of the midland Country to the Rocks; and from the foam or froth of the sea-water dashing and breaking against the bottom of the Rocks gather a certain clammy, glutinous matter, perchance the Sperm of Whales, or other fishes, of which*

2840 *Philos. Mag.* 22 (1805): 205.

2841 Barton papers, APS.

2842 [Rallidae, the family for rails. *Porzana carolina* L. (1758) is still known as the Sora. AOU. AUD.]

2843 Barton papers, APS.

2844 [As *Fringilla hyemalis* Wilson, *Amer. Ornithology* ii, 129, 1810, the Snow Bunting is now known as *Plectrophenax nivalis* L., 1758. AOU. AUD.]

2845 [*Emberiza oryzivora* Wilson, *Amer. Ornithology* ii, 48. 1810.]

2846 From handwriting, dated ca. 1790. Barton, miscellaneous papers, Box III, APS.

> *they built their nests...These nests the Chinese pluck from the rocks...which are esteemed by gluttons great delicacies, who dissolve them in chicken or mutton broth, are very fond of them...*

Willughby adds, "we have seen of this sort of Nests in the Cabinets of Athanasius Kircher...of the bigness of a Goose-egg, resembling Ising-glass...concerning their faculties or virtues" reports vary, but that some attribute to them "something Venereal" others not.[2847]

Edible bird nests are now identified with three species of swiftlets of the genus *Aerodramus* of southeast Asia who build their nests on the walls of caves. Their bracket-shaped nests, consisting of gelatinous secretion produced by paired sublingual glands of both sexes, are harvested by the natives who scrape the nests from the cave walls. They work as a team teetering on long ladders in the dark, using socketed bamboo poles that may be up to 130 meters long. If the nests are collected during the breeding season, the birds build again without delay. For one Sarawak species the incubation and care of the fledglings may continue for as much as three months, after which the young birds on their first flight of a quarter of a mile or more in darkness reach the cave mouth by echo-location. The taking of edible birds' nests dates from antiquity, and, though the commerce is declining in China, continues to flourish in Malaysia and Indonesia.[2848]

Of the hummingbird, *Trochilus colubris* (now *Archilochus* [2849]), Barton recorded:

> *W. Bartram is very confident, that we have, in the United States, but one species of Trochilus–.*
>
> *Mr. Heckewelder informs me, that Humming birds are very common on the western sides of the Alleghaney-mountains, but that the Turdus migrat*[orius, the robin] *is not so common there as on our side of the mountains.*
>
> ***May 11, 1793.*** *W. Bartram assures me, that the Humming-bird does not winter in any of the southern states. He thinks it flies to the tropics, perhaps to the line. This little bird (which I saw today, flying about the flowers of some species of Aesculus) he said, is fond of all the Horse-Chestnuts, except Aesculus Hippocastaneum, about which he did not recollect to have seen it.*
>
> ***May 21, 1804.*** *About a week ago, I obtained a female Trochilus at Hamilton's. Very soon after its death, I weighed it, and found the weight 27 grains.*[2850]

Barton published on hummingbird food in 1804, and he added a long note in his *Studies of Nature*, 1: 35, referring to the "bird-fly."

Other information he added: "March 11, 1805 W. Bartram is confident, that the Rail is a migrating bird: he has heard them passing by at night-time." Then "Charadrius vociferus" (Linnaeus based his trivial name on his transcription of Catesby's "Chattering plover," plate 1: 71):

> *This, which is well known by the name of Kildee* [Kildeer], *is common in Virginia. W. Bartram informs me, that in the Carolinas, the negro-children catch great numbers of these with hook & line. They bate a*

2847 Francis Willughby, *Ornithology*, 215.

2848 Jan Becking, *A Dictionary of Birds*, edited by Bruce Campbell and Elizabeth Lack (Vermillion, S.D., 1985), 172–173.

2849 [The Ruby-throated Hummingbird, *Archilochus colubris* L., 1758, is a more frequent visitor in eastern North America.]

2850 Barton papers, "Miscellaneous Facts," HSP.

hook, which is commonly a crooked pin, with a worm. The hook is attached to a line which is, no doubt, fastened by a peg. The bird swallowing the hook is readily caught.

Oct. 23, 1794. Mr. Billie assured me, it is a fact, that the Kildee has only made its appearance in the western country since the settlements have been formed there.[2851]

One observation dated 30 September 1799, "Sitta Europea?" was followed by a detailed full page description including "It weighed five drams, and 32 grains.—Perhaps it is Gmelin's Sitta canadensis," the red-breasted nuthatch.[2852] This had been recorded too late for the first issue of *Fragments*, which had been dated 18 April.

"What kind of a bird is the 'Nine-kill,' a kingbird?" queried Barton of Heckewelder, 28 December 1795, then went on to give a description obviously of a shrike that impales grasshoppers. "Is it *Lanius tyrannus*?" [*Tyrannus tyrannus*] He enclosed Pennant's description of *Lanius canadensis*. In 1802 he learned from Bartram that one species in Philadelphia is "called Loggerhead, by reason of the size of its head." At the same time on reading a description of "Falco Europogistus" from "Gannett's Annal," Bartram was "of opinion, that it is his Falco glaucus, a Bluish-Hawk. Indeed, he seemed confident on the subject."[2853]

The American turkey[2854] was central to Barton's oft-mentioned thesis that our plants and animals are predominantly unique or distinct from those of the Old World. Bartram recognized the wild turkey and knew it in our forests as "a very different species," which he called *Meleagris occidentalis*, from the barnyard bird introduced from Europe. That was his view in his *Travels* when he wrote a prose tribute to the "exceedingly splendid" male.[2855] Barton discussed the nativity of the turkey and recorded on 11 May 1793 that Bartram "seems pretty confident that the 'domestic turkey' is not indigenous in America." By 1799 Barton had concluded that he had no doubt "in the least" that the domesticated kind were first taken to Europe from America. In 1803 Bartram was still convinced the tame turkey and the wild bird were different species—Barton underscored *species* when recording Bartram's statement. Barton published a review of the question in 1805 and proposed that the American wild turkey be called "*Meleagris Palawa*," adopting its Indian name.[2856]

Today we believe the Spaniards and, or, the Portuguese, took the turkey from Oaxaca, Mexico, to Spain between 1518 and 1530, and that the bird was in England by 1525. It was this transplanted domesticated turkey that was the basis of the name given by Linnaeus in 1758 as *Meleagris gallopavo*. By this date confusion over the bird's identity and relation to the African helmeted guinea-fowl, *Numida meleagris*, lead to the latter's specific epithet's being adopted for the generic name of the American turkey. That Linnaeus understood the turkey from the domesticate and not the wild bird may be verified by reference to Francis Willughby, *Ornithology*, which was cited by Linnaeus in his *Systema Naturae*, ed. 10. Willughby's Plate XXVII figured the domesticate as "Gallo pavo The Turkey" or lesser cock peacock.[2857]

2851 Barton papers, "Miscellaneous Facts," APS.

2852 Barton papers, "Miscellaneous Facts," HSP. [Attributed to Linneaus, not J. F. Gmelin, as *Sitta canadensis*, 1766.]

2853 Gilbert collection, CPSP. Enigmatic "Falco Europogistus" must refer to an entry in *Fragments*, 11, "Falco glaucus of Bartram's *Travels*. Falco europigistes of Bosc." Louis Augusti Guillaume Bosc (1759–1828), French naturalist in Charleston; among his friends were André Michaux and Saint-Pierre. C. E. Hellmeyer, "Louis Bosc, ornitologue oublié," *Alauda* 2 (1930): 122–132. Harper, "Herpetological Nomenclature," 706–707. "Gannett's *Annal*," an enigmatic reference.

2854 [*Meleagris gallopavo* L., 1758. AOU.]

2855 Bartram *Travels*, 14, 83–84, 241, 270, where three names appear: *Meleagris occidentalis*, *M. americanus*, and *M. gallopavo americana*. See Harper, *Bartram's Travels*, 563 and 655, and "Bartram's Birds," 216.

2856 *PMPJ* 2 (1805) Pt. I: 162–163. E. Coues, zealous bibliographer, overlooked Barton's binomial, *Fragments*, 12, where the Delaware Indian name is given. *Discourse*, 79, barely mentions domestication in Clavigero, *History of Mexico*. References, undated, are provided in Wilson, *Ornithology*, 3: 201.

2857 Detailed history by Alfred Newton et al., *Dictionary of Birds* (London, 1893–1896, 4 vols.), 994; a shorter account by A. W. Schorger in A. Landsborough Thomson, *A New Dictionary of Birds* (New York, 1964), 844;

Turkeys in the wild state eat shell-fish, serpents, and other "animal matters" as well as vegetables. They can survive on powdered brick and water for sometime without "a perceptible diminution in their bulk strength, or Health." A random observation dated 9 September 1803 records that John Bartram assured Barton that a turkey cock took care of the young and brought them up.[2858]

Another fragment was gleaned by Barton from the farm on the Schuylkill, that on the life history of the flicker:

> *June 6. 1805. This day, W. Bartram shewed me, in his orchard, a hole in a limb of an apple-tree [Malus]. He said this hole is the passage to a Flicker's nest; and he assures me, that the male & female both worked on it, and were occupied five weeks, during which the male often trod the female. He remarked to me, that the birds had discovered much sagacity in the choice they had made of the limb; it being covered over, externally, with a kind of fungus: and he says such (dead) limbs are much softer than those which have not this fungus upon them. He supposes they judge of the nature of the limb by sounding it with their bills.*[2859]

Also in his journal Barton noted that Bartram had distinguished the black vulture as *Vultur atratus*[2860] distinct from the turkey vulture, *Vultur aura*. Barton's brother-in-law, Dr. Richard Walker of Winchester, Virginia, informed him that there is reason to believe vultures will devour new-born lambs. A Dr. Jenkins told him that the black vulture is protected in Savannah, and there is a fine for killing one, because they are useful scavengers. Bartram had never seen the little carrion crow (his name for the black vulture) north of the Altamaha River, and the vulture with a pouch upon its neck not anywhere except in East Florida. Of this last bird, he thought there was some notice in Willughby—He had given Barton a drawing of it.[2861]

On 20 April 1796 Barton had written Heckewelder at Bethlehem that:

> *...there is now in town a young Wyandot Indian. He tells me that the Indians often find Turkey-Buzzards in hollow trees in the winter season. As I have always considered the Turkey-buzzard as a migratory bird, this fact is curious to me. Have you ever heard of these birds being found in hollow-trees in winter?*[2862]

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updated in Bruce Campbell and Elizabeth Lack, editors, *Dictionary of Birds* (Vermillion, S.D., 1985), 613. For a review of A. W. Schorger, *The Wild Turkey; its history and domestication* (Norman, Okla., 1966) by J. Ewan, see *J. West* 6 (1967): 637–638. Also see Edward Avery McIlhenny and Robert Wilson Shufeldt, *Wild Turkey and its Hunting* (Garden City, N.Y., 1914), Chap. IV.

2858 Barton papers, HSP.

2859 Barton papers, HSP. Northern Flicker, *Colaptes auratus* L., the "Golden-winged woodpecker" of Catesby, *Natural History*, pl. 18.

2860 Bartram's name was published in 1793 by the German, Johann Matthews Bechstein (1757–1822) as *Coragypes atratus*. See AOU, and Wood, *Lit. Vert. Zool. Vultur atras* Wilson, 1814, with the name *Cathartes aura* L., 1758, used today. AOU.

2861 The drawing we did not locate. Bartram in *Travels*, 151–152 (Harper ed., 95–96), gave a full-page description of the bird he identified for Barton as like "The Vulture" in Willughby, *Ornithology*, 67, no. 7. Tab IV. Bartram had seen what he named *Vultur sacra*, but is now *Sarcoramphus papa* L., the King Vulture, along the St. Johns River above Lake George, Florida. Bartram had a specimen in hand. The vultures gathered in numbers after a fire (set by Indians or lightning) to feast on "roasted lizards, frogs" etc. Francis Harper, *Auk* 53 (1936): 381–392, detailed the validity of Bartram's Florida record, as not of the Caracara *Ibycter americanus* Boddaert, 1783, but of the king vulture; see also Harper, "Diary." As noted by Harper the presence of the king vulture in northern Florida is correlated with the former range of the Royal palm, *Roystonea regia* (Kunth) O. F. Cooke.

2862 Gilbert collection, CPSP. American Turkey vulture.

The snake bird, *Anhinga anhinga*, had been seen by Bartram in Florida. Barton had procured what was probably the first copy of Pennant's *Arctic Zoology* (London, 1790) to arrive in America, and Barton loaned it to his friend, who wrote "I am greatly pleased to see A Figure and description of the Asiatic *Plotus* particularly, because it induces me to believe that the Snake Bird of Carolina and Florida, is a Species of that Genus, and not widely different. The[e] may see a short account of the Snake Bird in my Journals of Travels."[2863] Barton replied the next day, 30 December 1792, "I wish you would consult Brisson, who has described Plotus Anhinga[2864] in his work (See vol. 6 p. 477)."[2865] After quoting Linnaeus, "I beg you will keep the Indian Zoology, until you have had leisure to pursue it." Barton included a description of what he called "Plotus loricatus," because of the still scale-like feathers, in his notes to Pennant, ignoring Bartram's name, but including a description of the bird, and "It is an agreeable sight to see numbers of these birds, early in the morning, standing on the ground, and expanding their large wings to the influence of the sun, having been wet by the dews of the night" no doubt fascinated with Bartram's account of the scene.[2866] Linnaeus's description of 1766 had been based on Marcgrave's Brazilian account of 1648. "Perhaps this is the species which you saw in Florida," Barton suggested. In 1797 "W. Bartram informs me, that he never saw the Snake-Bird [north of Cape Fear]. He does not find it noticed in Turton's Gmelin."

In his notes sent to Pennant there had been a description of "The Great Yellow-Throated Wren," the Carolina wren, "a social bird...Sometimes visits Pennsylvania, from the southward, when our summers are long, and warm...The male bird is figured in the large drawing, which I send along with this paper...It is a Motacilla. The species, I think, new."[2867] The drawing is missing. He continued to collect observations.

In 1797:

> *Young Mr. Schaffner of Lancaster informed me that the Jay-bird*[2868] *is very subject to convulsions, or a kind of staggers, of which, however they recover...His father will not eat them, because he knows them to be liable to it.*

Another anomaly was described by Amos Gregg, Jr., of Bristol, in January 1805:

> *Gentlemen of Veracity told me they had seen similar instances themselves—The Translation of the 'M. de Chastelleux travels in America' mentions his having seen the 'Dunghill Cock in frequent copulation with the Duck.'—One of these Gentlemen tells me a prolapsus probably of the 'Vagina'? was the consequence & death always ensued in a few days—Please excuse my freedom & the trouble I am to you Dear sir yours Sincerely*[2869]

Gregg had also mentioned the belted kingfisher, osprey and bald eagle. Of the summer tanager Barton recorded "In 1802, Mr. Jefferson informed me that in the summer of 1800" there was a greater number in his part of Virginia, and that "May 20, 1806—a few days ago, W. Bartram informed me, that Catesby's Sandhill-Red Bird, which is all red has been seen about Philadelphia; for lately one of them has been shot near his place, by Mr. [Alexander] Wilson,

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2863 Bartram papers, HSP. Regarding Pennant's publication see J. A. Allen, *Bull. Amer. Mus. Nat. Hist.* 24 (1968): 115. Pennant had not visited Ceylon. Pennant's *Indian Zoology*, ed. 2 (London, 1790) was based on the drawings of John Gideon Lotan, Governor of Ceylon for the Dutch East India Company. For Bartram's "Snake bird of Florida," which he called Colymbus colubrinus, see *Travels* 132–133, 295, and in Harper edition, 478.

2864 [Now recognized as *Anhinga anhinga* L. AOU.]

2865 Barton owned a copy of Mathurin Jacques Brisson (1723–1806), *Ornithologie, ou Methode...* (Paris, 1760, 6 vols.), see Wood, *Lit. Vert. Zool.*, 275. Sterling, *Barton's Notes*, 48; Ewan, "Barton's Library."

2866 HSP.

2867 The notes in Sterling, *Barton's Notes*, 49. [Carolina wren *Thryothorus ludovicianus* Latham, 1790. AOU. AUD.]

2868 [Common in eastern United States, the Blue Jay is *Cyanocitta cristata* L., 1758. AOU.]

2869 Barton papers, APS. The dunghill cock is the rooster. François Jean Chastelleux, *Travels in North America*, ed. 2 (London, 1787, 2 vols.). Ewan, "Barton's Library."

the schoolmaster; and Peale (he says) has one which was shot near Philadelphia." Barton had confused the summer redbird or *Muscicapa* of Catesby, Plate I: 56, which was the basis of *Fringilla rubra* of Linnaeus, with the summer tanager, "Merula marilandica" of Bartram's *Travels*, 290.[2870]

On one of his trips to Virginia Barton learned from Mr. Carter that "*Picus pileatus*[2871] is called by the negroes, in the lower part of Virginia 'Wood Lopper'; but why he could not tell." He learned a folk name for the flicker.[2872]

> *Mr. T. M. Randolph informed me that P*[icus] *auratus is called in Virginia 'Yucker' and 'Flicker' and never (that he has heard) Yellow Hammer. W. Bartram informs me that the bird feeds more upon the ground than the other species, that it is less destructive to our fruit than the Red-head, and that it builds in the holes of trees, sometimes as low as six feet.*
>
> *Nolan informed me that 'High-Holder,'* [is the] *large Picus (P. pileatus).*
>
> ***Sept. 1799.** This day I observed two birds, I am very confident they are Picus auratus, on a gum-tree (Nyssa integrifolia), in my yard, which has a good deal of ripe fruit. One of the birds was busy eating the berries.—The tenant's son assures me, that both this species of Picus and Robins (Turd*[us]*, migra*[torius]*) eat the berries.*
>
> ***Oct. 3 1799.** A boy informed me that Picus auratus is fond of Sassafras berries.*[2873]

Matthias Barton had written that the canvasback duck had been seen on the Susquehanna and identified by "Mr. R," and Barton entered into his notes:

> ***March 12, 1804.** Mr. Rafenesk is very confident, that the 'CanvasBack' of the Susquehanna (which he has examined) is the Anas ferina. He says, that it feeds upon the 'shoots' of the Vallisneria, as he has been informed by Mr. W. Hamilton. I showed R. the plate of Anas ferina in Brisson, and he says it a good representation of Canvas Back.*[2874]

Barton and Rafinesque discussed the status of the two related species of ducks, the canvasback—then undescribed by ornithologists—and the European prochard, then known as *Anas ferina*, when Barton showed him Plate XXXV in his copy of Brisson's *Ornithologie* (Figure 74). It was ten years later that the canvasback was named *Anas valisneria* in the last volume of Wilson's *American Ornithology*, published posthumously through the efforts of George Ord, who amplified the account. Wilson saw "countless flights" of canvasbacks pass over his schoolhouse in 1796. Four months before his death he wrote William Bartram that he was writing his account of the ducks.[2875] Interestingly, the eelgrass *Vallisneria* likewise displays two species: the European *V. spiralis*, and the North American *V. americana*. The European prochard prefers animal matter rather than vegetable foods, however. "Wild celery or Tape Grass" was one of the first plants Nuttall encountered in America, and Pursh

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2870 See Haper's notes, p. 563, in his edition of Bartram's *Travels*. [The Summer Tanager, or Redbird, is *Piranga rubra* L., 1758; the Scarlet Tanager, *Piranga olivacea* J. F. Gmelin, 1789. AOU. AUD.]

2871 [The Pileated Woodpecker, now *Dryocopus pileatus* L., 1758. AOU. AUD.]

2872 [The Northern Flicker, *Colaptes auratus* L., 1758. AOU.]

2873 Barton's Journal 1802, Appendix 1. "Miscellaneous Facts," HSP.

2874 Barton, miscellaneous papers, HSP. [Shoots of the *Vallisneria* refers to the aquatic plant Eelgrass.]

2875 Wilson, *American Ornithology* (1814) 8: 103. pl. 70, fig. 5; Hunter, *Wilson*, 405; Cantwell, *Wilson*, 94. *Anas valisineria*, now *Aythya valisineria*, the Canvasback Duck.

takes pains to insist that he observed the "most interesting and singular plant" in 1800, before Nuttall's arrival![2876]

Of the wood duck Barton reported to Lacépède:

> *I lately ascertained a fact in ornithology, at once singular and interesting. It is well known that the anas sponsa of Linnaeus, called in the United States summer duck, breeds in the hollows of trees, on the banks of rivers, or in islands at a considerable height from the ground. The young ones, soon after they are hatched, descend the sides of the tree, and thus make their way into the water. I do not know of a similar fact in the history of birds.*[2877]

Of "Camrass acuta"[2878] on 4 March 1804 Mr. Robertson, one of his pupils, informed him that the cold winter of 1779–1780 killed the long grass that the Sheldrake[2879] fed upon and they became few on the James River. Barton purchased one "about 3 weeks of a man who shot it in the Delaware, near Chester. The last I examined very carefully [by] consulting Pennant and Brisson, I am quite persuaded, that it is Anas acuta, admirably described by the two authors which I mentioned. The man of whom I purchased mine, called it the Spring tail."

John Heckewelder continued his flow of "intelligence" on the life histories of birds from Bethlehem to Barton. On 27 January 1804, returning a borrowed book, he added notes on the house wren, passenger pigeon, and shrikes.

> *Dear Sir,*
>
> *My last was by Young Dr. King, with whom I returned Your Book, together with a specimen of the Trout for your examination all which I hope You have received.*
>
> *I am still of the same Opinion, that our house wren is with us all Winter—& my neighbours here, who also delight in this Bird & are careful to place Boxes on poles in their Gardens for them to breed in, say the same—But that another kind of Wren, rather larger than the House Wren, & more of a Yellowish brown colour visits us in the Winter Season, has also been noticed. I had twice this Winter, an Opportunity of seeing both those Species of Wrens, at one & the same time in my Garden, & what convinced me most, that they are 2 different Species, was, that at the approach of a Cat, the common Wren fluttered about the place the Cat lay concealed—& with the same anxiety & cries, as I am accustomed to hear them during the Summer Season on similar occasions & especially when their Young have just left their Nest; while the other kind, did not appear to discover any anxiety, & rather gazed on the Cat as a curiosity. I have conversed with several Persons on the Subject, who all say, that they frequently see, during the Winter, the common house Wren hovering about their Stables & Wood houses—it has also been observed that several kinds of Birds had visited us this Winter altho their stay has been but of a short duration, among which was one species of a Yellowish Bird, but not so plump as the Yellow bird, whose voice was remarkably loud for its size, & tune or notes sounded, or resembled a Che-wee-wee-wee-wee-wee-wee—always calling out 'wee' 6-times.*

2876 Norman C. Fassett, *A Manual of Aquatic Plants* (New York, 1940) 39; Graustein, *Nuttall*, 37; Pursh, *Flora*, 602; John C. Phillips and W. E. Castle, *A Natural History of the Ducks* 3 (Boston, 1922–1926, 4 vols.) (1925): 156.

2877 *Philos. Mag.* 22 (1805): 205. [The Summer or Wood Duck known now as *Aix sponsa* L., 1758. AOU. AUD.]

2878 Barton's suggested name?

2879 The Northern Pintail Duck, *Anas acuta* L., rather than the fish-eating sheldrake.

We have Robbins[2880] *here this whole Winter, & before the last Snow fell Pidgeons were plenty–Mr. Smith shot some time since at a very beautiful Nine killer*[2881] *–Lanius Excubitor!–but unfortunately missed him. This Bird had been seen for a Week or two in the Orchard, watching & catching small Birds, where he was shot at by Mr Smith–He appeared by all who had seen him, cloathed in a beautiful plume–much more so than the kind commonly seen in that part which generally is of a whitish blue or gray Colour, as the Wings, Tail &c. was as white as the Snow*[2882] *–I have since been several times out to look for him, but think he is frightened off– Mr. Colver informs me, that within a Year or two he does not recollect to have seen this Bird, whereas formerly they were continually in Winter about his Farm & Orchard catching small Birds–He observed to me, that he thinks the larger Birds of Prey–Hawks–who are this Season very numerous–moreso than ever was known, have frightened them away–*[2883]

A continual interest of Barton's was food eaten by birds; observations had been recorded in his calendar in *Fragments*. In his copy of a letter without address, he answered the query of a correspondent in May 1808:

I know not that the berries of this Smilax are eaten by any of the numerous species of birds, such as Turdus migratorius, Turdus &c. which so severelly devour the wild fruits of our country. I rather think they are not, since one always finds a great profusion of the berries which remain on the plants through the whole of winter, and even pretty late in the spring.[2884]

John Eatton LeConte in New York had seen *Fragments* and sent his observations on the rice-bird in a letter of 8 September 1812, his second known to Barton. It concluded with "Hoping to have the pleasure of soon seeing you in Phila.":

Sir

...In riding along side of some of the marshes on the River Delaware, I could not help observing the numerous flocks of Emberiza oryzivora[2885] *that crowded to the Zyzania,*[2886] *it brought to mind, what I think you make a subject of enquiry in your fragments, how it happens that among the immense numbers of these birds, so few black ones are to be seen. I think if this matter be attentively considered, no cause for admiration will remain for it must be remembered, that at this season of the year the greater part of them are young ones, and that the young of most species resemble the female more than the male; now, in any number of this Emberiza, allowing one half of the aged ones to be females, and each female to be attended by 5 young ones (which is but a moderate allowance) it will readily be seen that the proportion of the black to the yellow will be as 1 to 6 and this nearly the truth.*[2887]

2880 [*Turdus migratorius* L., Robin. AOU. AUD.]

2881 Northern shrike. [*Lanius excubitor* L. AOU. AUD.]

2882 An albino?

2883 Barton papers, APS.

2884 Barton papers, APS.

2885 [*Dolichonyx oryzivorus* L., known as Rice Bird, Reed Bird, or Bobolink. AOU. AUD.]

2886 [*Zizania* Gronov. ex L.; *Zizania aquatica* L. is the American native Wild Rice. ITIS. TROPICOS.]

2887 Barton papers, APS.

One of the most distinctive American water birds is the limpkin, so-called from its characteristic limping gait, or crying bird, from its "loud, mournful wail" uttered especially at night. William Bartram described this "very curious bird," called by an Indian name "Ephouskyca" in *Travels*. There he named the crying bird *Tantalus pictus*, thus allying it with the ibises.[2888] He had shot the limpkin on the St. Johns River in the vicinity of St. Francis, Florida, in the spring of 1774. We surmise that Bartram dined upon the limpkin, as he had dined upon the type specimen of his Florida Sandhill Crane, *Grus pratensis*.[2889]

It was toward the end of Barton's life, when he again indulged his enthusiasm for Indian names, that he took up *Tantalus Ephouskyca* for Bartram's crying bird when he presented a paper at the meeting of the Linnean Society in London 6 June 1815. His manuscript, based on Bartram's notes and accompanied by a drawing, attributed to Bartram, was not published until 1818 (Figure 51). Barton said the drawing had lain "for years" among his papers, but the bird illustrated has a forced animation and stands on a base, suggesting an exhibit in Peales' Museum. It may have been the work of Alexander Reider, a German artist who arrived in Philadelphia about 1810, and worked for a time under Bartram's supervision.

Barton had set about collecting "those few facts and observations" remarking that "we know nothing" of the crying bird. In fact, through its names, limpkin history goes back to Aristotle's *Skolopax* for the European woodcock, the word referring to the long terete bill. The limpkin appears first under the Amerindian name "guara" in Willem Piso and Georg Marcgrave, *Historiae Naturalis Brasiliae* (Amsterdam, 1648). Willughby described the European woodcock as *Scolopax*, and Linnaeus adopted that name for several shorebirds in his *Systema Naturae*, ed. 10.[2890] By 1815 Barton decided that the crying bird was not one of Latham's nineteen species of *Tantalus*,[2891] though he assigned Bartram's bird to that genus. Latham had called it the "Crying curlew"; Cuvier, a crane; and Charles Bonaparte, at first a rail, as *Rallus giganteus*. Later Bonaparte, when editing Wilson's *American Ornithology*, called the bird the "Scolopaceous Courlan," from its resemblance to the woodcock. Today Bartram's *Tantalus pictus* and Barton's adaptation of his folk name *Tantalus Ephouskyca* are quite forgotten.[2892]

In his edition of Saint-Pierre's *Studies of Nature* Barton corrected some of Saint-Pierre's observations. When Saint-Pierre, in espousing the harmonies of nature, commented on the beauty of the blue bottle, our bachelor's button, and the red of the wild poppy seen together in a field, Barton specified:

> *He does not mean the plant frequently called in the United States blue-bottle, which is a species of Hyacinth: but the corn blue-bottle of the English, which is the centaurea cyanus of the botanists. Saint-Pierre would have been pleased to have known of the attachment to this plant of various species of American birds, whose colours are sometimes in beautiful harmony, and sometimes in equally beautiful contrast, with the colours of the flowers of the blue-bottle. I think none of our birds so frequently perch upon the cyanus, as the fringilla tristis, whose colour is nearly, one uniform yellow; and hence called the yellow bird.—B.S.B.*[2893]

2888 For further comments on the drawing, see Ewan, *Bartram*, 20, and 57, pl. 18: The Limpkin is now known as *Aramus guarauna* L., 1766. AOU. AUD.]

2889 [*Grus canadensis* L., 1758, the Florida Sandhill Crane is also segregated as a race or subspecies, *G. canadensis pratensis*. AOU. AUD. ZOOBANK.]

2890 [Eurasian Woodcock, *Scolopax rustica* L., 1758; American Woodcock, *S. minor* J. F. Gmelin, 1789. AOU. AUD.]

2891 John Latham (1740–1837), *A General Synopsis of Birds* (London, 1781–1785, 3 vols.).

2892 Synonomy in Wilson, *Ornithology* 3: 388. Recent literature and photograph of the living bird is in Peter Charles Howard Pritchard, ed., *Rare and endangered Biota of Florida: Volume two: Birds* (Gainesville, 1978).

2893 Barton, *Studies of Nature*, 2: 28. ["Fringilla tristis," the American Goldfinch *Carduelis tristis* L., 1758. AOU. AUD.]

When Saint-Pierre wrote "If however it were possible to extinguish the whole race of insects, it would be the height of imprudence to set about it, for we should destroy alone with them most of the feathered tribes of our plains, which have no other food for their young while in the nest," Barton referred the reader to his *Fragments* and quoted:

> *As a devourer of pernicious insects, one of the most useful birds...is the House-Wren, or certhia familiaris.*[2894] *This little bird seems peculiarly fond of the society of man, and it must be confessed, that it is often protected by his interested care. From observing the usefulness of this bird in destroying insects, it has long been a custom, in many parts of our country, to fix a small box at the end of a long pole in gardens about houses, &c, as a place to build in...and hatch their young...the parent birds feed them with a variety of different insects, particularly such as are injurious...One of my friends...found that they did this from forty to sixty times in an hour; and in one particular hour the birds carried food to their young seventy-one times. In this business they were engaged the greater part of the day, say twelve hours. Taking the medium, therefore of fifty times an hour, it appeared that a single pair of these birds took from the cabbage, salad, beans, peas, and other vegetables in the garden, at least six hundred insects in the course of one day. This calculation proceeds from the supposition that the two birds took each, only a single insect each time. But it is highly probable, they often took several at a time.—B.S.B.*[2895]

Barton had explained in the Introduction to *Fragments* that "much light might be thrown upon" migration and other subjects:

> *...if natural history were cultivated in the United States, with a portion of that innocent and useful zeal with which it is cultivated in Europe: with only a small portion of that ardent zeal which so strongly characterizes the Americans in their pursuit of gain. But, as yet, little attention is paid to the study of nature in the United States. In our colleges, it is not taught as an indispensible branch of polite or useful knowledge, but is obliged to yield its laurels to languages which are withered or dead, and to studies which are useless or ignoble.*

Then in a footnote he asserts that Greek and Latin are essential for study of natural history, but that if only one fifth of the time spent in their study, especially of Greek, were spent on them, and the rest spent on natural history:

> *...in less than twenty years, the animal, the vegetable, and the mineral productions of the United States would be pretty well investigated. But what in cultivation of a science so extensive and so difficult, can be expected from the labours of two or three individuals, unaided by the public, and trammelled by professional engagements and pursuits?*[2896]

2894 [*Certhia familiaris* L., 1758, more properly refers to the Eurasian Creeper, with its American counterpart, *Certhia americana*, named by Bonaparte, 1838. The American House Wren is *Troglodytes aedon* Vieillot, 1809. AOU. AUD.]

2895 Barton, *Studies of Nature*, 1: 215.

2896 *Fragments*, viii.

This was his recurrent lament. "Fragments Part II" was to have been the work on Zoology for which he unsuccessfully sought subscribers. While he continued to assemble notes he spent more and more time with his pupils and their researches.

Joseph Priestley, Northumberland, Pennsylvania, 27 Nov. 1800 wrote to Barton:

> *I thank you for your Fragments and think them deserving of a more respectable title. They have afforded me much instruction. Were I to begin again, I would apply to Natural History, and rejoice to have such a guide, and such an example as you have set. 'Trammelled' as you are in a profession, I am astonished that you have found time to do so much, and so well. The first naturalists in Europe must owe you great obligations. If you do nothing more, you will have established a lasting reputation.*[2897]

A review of *Fragments* appeared in 1805 in *Medical Repository*, perhaps by Edward Miller, M.D. It ran to twenty-four pages, half as long as the principal text of Barton's folio. The review was unmistakably approving:

> *The migration of birds is a very curious subject of natural history, and has generally been ascribed, by observers, to that power or faculty denominated instinct. Professor Barton...opposes the notion that birds 'never acquire any knowledge by experience.' We are very glad to find him engaged in a work upon the instinct of animals, which is intended for publication (Introduc. p. 16, note)...as likewise parts second and third of these 'Fragments' (p. 24), if this first number is well received; and an extensive work on the vegetables of Pennsylvania and some of the adjoining States...It must be regretted, by all lovers of natural history, that a 'want of leisure' should prevent the learned author's intention of offering to the world the fruits of his labours on these subjects, as well as from publishing 'a number of tracts relative to the natural history of North-America, which have long laid in his closet.' It appears to us that the fragments, and the other pieces mentioned, as far as we can judge from their titles, are but chapters, as it were, or subdivisions, of what ought to be one great or general work on American natural history, and which would be abundantly more interesting if time could be found for the industrious Professor to methodize them into a more regular form, or arrange them into a WHOLE. We have no doubt of the skill of the artist to put together his valuable materials in the shape of a structure possessing both compactness and symmetry. We earnestly hope the accomplishment of this design, for which Dr. Barton seems to us to possess talents so eminently and singularly befitting him. We do not agree with him in calling the matter he has collected 'fragmentary rubbish.' Rubbish is old stuff of buildings undergoing decay, Dr. Barton's are new materials for a grand edifice.*[2898]

In his Postscript to *Fragments*, p. 24, Barton had confided "The preceding 'fragmentary rubbish' (to use the words of Donne) is thrown upon the public with some degree of confidence." In the copy of the second issue purchased by Ralph Ellis,[2899] but which surely had belonged, perhaps first to Wilson, then to George Ord, are marginalia, "fragmentary rubbish," and:

2897 Barton papers, HSP.

2898 *Med. Repos.* 3 (1805): 177-189; quotation: 178-179.

2899 Mengel, *Ellis*, item no. 179.

> *These are not the words of Donne, but those which Johnson puts into his mouth. It would seem probable that our learned naturalist knew nothing of Donne, except the report. Donne's words are 'fragmentary rubbidge' Poems ed. 1669. 8° p. 225. However, the title bestowed upon this work by Dr. Barton is a very happy one; for it is, in truth, Rubbish.*
>
> *This 'happy genius' was Alexander Wilson, whose admirable ornithology convinced the author of the 'Rubbish', that it would be well to end his labours, in this department, at PART FIRST.*

Elliott Coues did not agree with that decidedly unfriendly conclusion for he wrote:

> *This tract, a mere 'fragment,' as the author says, is one of the most notable special treatises on North American ornithology of the last century. The author had every qualification of a great naturalist except success, his actual achievements being far from commensurate with his eminent ability and erudition. He seems to have lacked the faculty of utilizing what he knew; like a saturated solution wanting some slight circumstance to crystallize, the result was never realized. Had Barton reaped what he sowed, the fatherhood of American ornithology would be put back of Wilson. As it is, his work remains about on a par with that of Bartram in present significance, and its author is today chiefly known in ornithology by having proposed for the Barn swallow the name Hirundo horreorum, which has been current since Baird revived it in 1858.*[2900] [The name is now referred to *Hirundo rustica*.]

Coues goes on with a summary of *Fragments* and comments on Barton's dependence on Bartram for his nomenclature, lamenting the lack of adequate scientific description for the names proposed.

> *The whole tract is ornithological–a bird picture drawn in the vicinity of Philadelphia. The 'Introduction,' in effect, is chiefly an essay on migration, alleged torpidity, etc., based on extensive personal observation, set forth with elegance, erudition and veracity. The main text consists for the most part, of a calendary enumeration of the migratory birds of Pennsylvania, collated with the progress of vegetation and various meterological and miscellaneous observations.*

Coues reminded us that few are aware how much Wilson owed to Bartram, yet "Bartram's *alter ego* was not Wilson but Barton."[2901] Bartram's diaries of 1797–1802, at the Historical Society of Pennsylvania, and of 1802–1822, now at the Academy of Natural Sciences in Philadelphia, show that Bartram certainly received encouragement and stimulation from Barton. In the preface to the Willughby Society edition of *Fragments* in London in 1883, Osbert Salvin concluded that "The present work shows that its author was a man of no ordinary observation and intelligence."

The correlation of plant flowering with animal life, particularly birds, continued to fascinate Barton. On his journey to Virginia in 1802 he recorded:

2900 Coues, *Key*, 592–593.

2901 Coues, *Key*, xvi–xviii.

My brother Richard observed to me, that, although there is very little difference between the latitude of Wright's farm, and that of Harper's ferry, there is, at the same time, much more ice at the farm, than at the latter place. This, he thinks, is owing to this circumstance, that the Susquehanna comes from the north & the Potomak much more from the South.

...Dr. Lynn assures me, that between Newtown where he now (1802) resides and the 'Glades' where he did reside, there is a difference of, at least, 3 weeks; and that between the Glades and Fort Cumberland, there is a difference of two weeks.

Dr. Lynn informed me, that the 'Service tree' (I doubt not Mespilus canadensis[2902]) is the first flowering tree, or shrub, about the Glades.[2903]

Andrew Caldwell (1733–1808) in writing from Dublin 3 February 1802 to James Edward Smith, noted that he had seen in "December's Monthly Review a work by R. S. Barton on the natural history of Pennsylvania. He considers the connexion between the seasons and migration of birds."[2904] Charles Caldwell was referring to *Fragments* in his review, when he noted the unusual numbers of Red Crossbills, *Loxia curvirostra*, as "good prognostics of a severe winter."[2905]

Barton's difficulties with the sale of his works in England surfaces in his letter to Messrs. Robinson, Booksellers, London, the letter "favored by Mr. Conrad."

Gentlemen,

In answer to my several letters, relative to the Fragments and other works which I transmitted to you, I have never yet received a line. Your silence has been extremely injurious to me, for not knowing what number of copies of the Fragments may remain on hand (in England) I have been prevented from reprinting the work in Philadelphia where not a copy of it is to be procured. Your silence has also prevented me from publishing the 2nd part of the work, though a great part of it has been printed off for more than three years.

I earnestly request you, on the reciept of this to put into the hands of Mr. Conrad all the unsold copies of the Fragments and other works transmitted to you, that they may be returned to me in Philadelphia. This request is so just, that, I flatter myself you will not, for a moment, refuse to grant it. I request you, at the same time, to give Mr. Conrad a correct statement of the copies which you have sold, and if the works have had a sale (I have seen by the Reviews &c that you have advertised them) you are desired to pay the monies due to me into the hands of my friend, who is authorized to transact this business for me, and to whom I have thought it my duty to permit the reading of this letter.

I need not say more. But I will add that if the books have sold, I ought to be paid for them; if not, they will sell in this country, where they (especially the Fragments) are much called for. With respect I remain, Gentlemen, Your friend, &c

Benjamin Smith Barton

Philadelphia April 26th 1806[2906]

2902 [*Amelanchier canadensis* (L.) Medik., Serviceberry or Service Tree. IPNI. ITIS.]

2903 Barton Journals, HSP.

2904 Smith, *Correspondence* 2: 153.

2905 *Port Folio.*

2906 Linnean Society of London.

From rough figures among his papers at the APS, he seems to have received £11.2.6 from Robinson.

Fragments stirred further information. Dr. Henry M. Gray, a former pupil, highly regarded, sent this note from Jerusalem Mills, Maryland, 8 April 1807:

> *Our winter has been very severe & the spring is uncommonly backward—We had Draba verna in fl. the 20th January-Feby. 15th Acer Rubr: 17 Ulmus Amer:—20th. Betula Alnus—April 1—Houstonia—5th. Oxalis Acet*[2907]*:—Hopea is by this time in bloom I saw it a few days ago upon the point of unfolding its flowers—Some of the Lauri begin to put forth—I found a viola in fl this day, with cordate-lanceolate leaves—Martins*[2908] *were seen here the 30th March.*
>
> *I hope to be indulged with a line from you now that your busiest season is over.*[2909]

"Proffer Botany Nat: Hist: & M.M." continued to receive contributions as from John Len Prescott, who wrote from Charleston, South Carolina, 16 March 1813:

> *Respected Sir*
>
> *I have placed on board of the schooner Eliza Captain Pointer for Philadelphia a young eagle, which I believe to belong to the species called by the common name of Bald Eagle—(Falco Leucocephalus*[2910]*) It is my sincere wish that it may arrive safe and be acceptable. By the letter accompanying the bird you will find I now have on hand some alligators for yourself the reason why I did not send them is that some are to be sent to Dr. Latham & Isaac Johnson in a day or two...I am sorry to state that the Pincknea I promised you and procured for you last fall died by the very severe winter we had had; but rest assured if possible I shall forward you one this summer. On my departure from Philadelphia you were good enough to promise me a few mineral specimens to add to my little collection; as that study is my favorite one & myself the only person turning any attention to it here. I should be happy to recieve any duplicates you may be willing to spare. NB I have paid the freight of the bird Believe me sir Your's sincerely·*
>
> *Jhn Len Prescot*[2911]

Whether the bald eagle was delivered, alive or dead, is unknown, but that living eagles were kept in Philadelphia is related by Alexander Wilson. Aloysius Enslen kept an eagle for four years. It was examined frequently by Wilson, who decided that the "Sea eagle, Falco ossifragus" of Pennant was the immature bald eagle.

The small tree *Pinckneya pubens* Michaux interests pharmacists for its quinine-like properties. Baldwin believed it so closely allied to *Cinchona* as not to warrant distinct genetic standing. One may speculate that Barton considered another topic for some promising student in his classes: the medicinal properties of *Pinckneya bracteata*, William Bartram's original name for his discovery.

2907 [*Acer rubrum* L., Red Maple; *Ulmus americana* L., American Elm; *Alnus* species, Alder; *Houstonia* L., Bluet; *Oxalis acetosella* L., Wood Sorrel. IPNI. ITIS.]

2908 [*Progne subis* L., the Purple Martin. AOU. AUD.]

2909 Barton papers, APS.

2910 [Bald Eagle, now *Haliaeetus leucocephalus* L., 1766. AOU. AUD. ZOOBANK.]

2911 Barton papers, APS.

Barton and Bartram had not been the only Philadelphians concerned with birds. Charles Willson Peale saw the need for a catalog and comparison of American birds with European. He wrote "Citizen Geoffray," that is Etienne Geoffroy Saint-Hilaire, Professor of Natural History at the National Museum, Paris, on 1 June 1797 that he had been "very successful with the feathered tribe, having procured several which appear quite new to me. I have found a variety of the Carolina cuckoo,[2912] One kind is only described in Catesby. I take such pains to know all our birds, and by dissecting each that I preserve will enable me to speak with certainty on the sexes of many of our birds, this I find more particularly necessary as some authors have committed errors in their descriptions of them.

> *When I print that part of my Catalogue which describes the Birds it is my intention to give some etchings of those which I find has not been described. These plates I will execute myself because I expect that at least I will be more correct than if done by such engravers as this country affords. Truth is preferable tho presented in a course garb.*
>
> *When this Catalogue is completed it will in a great measure shew what birds of this country agree with those of Europe and when my collection of European subjects is more extended I shall enlarge on this aspect, and I shall attend to your wish if our animals transported from Europe into this country to Know 'what degeneration their transplanting has produced on their economy.' I shall in future be more particular in my observations of other animals generally which I preserve, weighing many of them, this I have practiced with the birds that I have preserved this spring.*[2913]

Barton had denied from his earliest publications that American animals of the same species as European were smaller, and that introduced European farm animals degenerated in this country as Buffon had claimed, and as many European authors had been persuaded.

Both Peale and Barton saw that there were birds overlooked by Jefferson and by Bartram in *Travels* and sought to enhance the record. Jefferson had listed the birds he had found in the 1771 edition of Mark Catesby's *Natural History*, ed. 3, giving Catesby's name, common names, and a Buffon reference in composing his *Notes on the State of Virginia*. "Between ninety and a hundred of our birds have been described by Catesby. His drawings are better as to form and attitude, than colouring, which is generally too high." Catesby had not lived to supervise the coloring in this edition, and less skilled colorists had been employed. Peale's cabinet assembled in the Museum was the ready reference for all Philadelphians interested, and Barton was a regular visitor, sometimes with his natural history class. He eagerly absorbed Peale's observations and he probably aided Peale in classification. A topic of special interest was the differences between the sexes, and Barton in *Fragments* drew attention to the fact that many authors had declared more species because they had not recognized differences. Had Barton been aware of the differences before Peale demonstrated his dissections?

Peale's plan for his catalog was supplanted by Alexander Wilson's. He was convinced that Wilson "will rectify many errors of authors of our birds...This gentleman is indefatigable...He has aided me considerably," so he wrote in 1808 to Saint Hilaire.[2914] The "etchings" Peale prepared cannot have been many.

In *Discourse*, Barton summed up the unfinished searches for as yet undescribed birds: for answers to bird migration and torpidity; to coincidence with plant flowering and distribution; to climate and weather; and to native birds worthy of domestication, for example,

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2912 [Catesby illustrated the "Cuckow of Carolina," *Nat. Hist. N. Amer.* The Carolina Cuckoo or *Cuculus carolinensis*, cf. *Bonap. Syn.* 42, is known as the Yellow-billed Cuckoo *Coccyzus americanus* L., 1758. AOU. AUD.]

2913 Draft in C. W. Peale's Letterbook and Catalogue of Museum, APS.

2914 Sellers, *Peale's Museum*, 205.

the wild goose, pheasant,[2915] partridge, or quail. He reminded his readers that "Natural History is not merely a science of Names and Arrangements. Higher objects should claim the attention of the philosophical naturalists." He declared that "Instinct, or manners, or habits" were the most interesting part of natural history.

Barton had spoken of wonder and feeling in writing of bird migration, "those habits which have been given to [birds] as to us, by a creator whose works so loudly proclaim his wisdom, and the extent of his benevolence and attention to the innumerable living objects which he has formed."[2916]

Alexander Wilson

Alexander Wilson's object in describing a bird being different from Barton's, he wrote:

> *I shall not, in the manner of some, attempt to amuse the reader with a repetition of the unintelligible names given to this bird by the Indians; or the superstitious notions generally entertained of it by the same people.*[2917]

While Rubens Peale (1784–1865) was in the woods shooting birds for his father's museum, he first met Alexander Wilson (1766–1813). Rubens, the ninth child, fourth son of Charles Willson Peale, began at fifteen years of age helping his father at the museum, working beside his younger sister Sophy, mounting birds, although he suffered poor eyesight for which his father made him spectacles. The most botanically inclined of the Peale family, Rubens attended classes at the University in 1804, but details are lacking, and Barton left no reference to his having taught Rubens. Although the poet Wilson expressed his sadness over the killing of his songsters, he was soon made to see the importance of the role of stuffed birds in the Museum. He responded to an invitation to visit the Museum, and his lifelong friendship with the Peales was sealed.

A Scot, an itinerant weaver and poet, Wilson had arrived in America about 1797, and in a letter from Bloomfield, New Jersey, 23 July 1801, he described his situation:

> *The schoolhouse in which I teach is situated at the extremity of a spacious level plain of sand, thinly covered with grasses, in the centre of this plain stands a newly erected stone meeting house, 80 feet by 60, which forms a striking contrast with my sanctum sanctorum, which has been framed of logs some hundred years old, and looks like an old century Box—the Scholars have been accustomed to great liberties by their former teacher—They used to piss and put stones in his coat pocked &c &c—I was told that the people do not like to have their children punished but I began with such a system of terror as soon established my authority most effectually—I succeed in teaching them to read and I care for none of their objections.*[2918]

Wilson was still teaching "scholars" in village schools, when he moved to Gray's Ferry in William Bartram's neighborhood, where he discovered "Nature's works" in that naturalist's company. To Bartram at Kingsessing he wrote 31 March 1804:

> *'Tis true I sometimes smile to think that while others are immersed in deep schemes of speculation and aggrandizement in building Town and purchasing plantations I am entranced in contemplation over the plumage*

2915 The Pheasant was not native to North America; it was introduced from the Old World.

2916 *Fragments*, ix–x.

2917 Wilson, *Ornithology*, 2: 248; Robert Cantwell in *DSB*; Witmer Stone in *DAB*; Ord, "Wilson."

2918 Hunter, *Wilson*, 184, the letter to a friend, Charles Orr.

> *of a Lark or gazing like a depraved lover on the phiz of an Owl. While others are hoarding up with avaricious eye their Bags of money without the power of enjoying it, I am collecting without injuring my conscience or wounding my peace of mind those beautifull specimens of Nature's work that are forever pleasing. I have had live Crows/Hawks and Opossums Snakes Owls Lizzards Squirrels &c &c so that my room has sometimes reminded me of Noah's Ark only Noah had a Wife in one corner of it and here the parallel between us don't altogether tally yet...*[2919]

Little record remains of visits of Wilson with Barton. Barton may not have received him with his customary warmth for naturalists since *Fragments* had already been published and he was concentrating on other fields. He may also have heard Wilson's criticism, which he published later in the first volume of his *American Ornithology*, that Barton "has favoured us with a no. of remarks" on birds, "only as a catalogue of names, without the detail of specific particulars or [illustrations]." There is one morsel: when he died, an "A. Wilson," surely ours, still owed Barton twenty dollars. Always hard-pressed financially, Wilson had lived for some time in the attic at the Bartrams.

Soon after its appearance in November 1804, Bartram loaned Wilson his copy of Barton's new periodical, the *Philadelphia Medical and Physical Journal*, knowing that having been a spectator, Wilson would be particularly interested in Barton's "Description of the Falls of Niagara."[2920] Wilson wrote to Bartram:

> *Union School, December 24th, 1804.*
>
> *I have perused Dr. Barton's publication, and return it with many thanks for the agreeable and unexpected treat it has afforded me. The description of the Falls of Niagara is, in some places, a just, though faint, delineation of that stupendous cataract. But many interesting particulars are omitted; and much of the writer's reasoning on the improbability of the wearing away of the precipice, and consequent recession of the falls, seems contradicted by every appearance there; and many other assertions are incorrect. Yet on such a subject, everything, however trifling, seems to attract attention: the reader's imagination supplying him with scenery in abundance, even amidst the feebleness and barenness of the meanest writer's description.*[2921]

Sometime during October 1806, now living at Number 145 Pine Street, Wilson signed Barton's subscription list for his projected *Elements of Zoology*. Six years later he lamented to François Michaux that "Dr. Barton has not yet published his General Zoology, he has been announcing from time to time, for so many years. It is much easier to say these things than to do them."[2922] September of 1808 saw the first part of Alexander Wilson's *American Ornithology*, with the aid of George Ord (1781–1866). Wilson had managed to include three novelties from the Lewis and Clark Expedition: the Lewis woodpecker, western tanager, and Clark's crow, now Clark nutcracker.[2923]

Wilson's annoyance with Barton flared after he had been engaged by Samuel F. Bradford, publisher, who was bringing out an American edition of Abraham Rees's

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2919 Hunter, *Wilson*, 210–211.

2920 *PMPJ* 1 (1804) Pt. I: 39–46.

2921 Ord, "Wilson," xxxv.

2922 A. Wilson, 6 June 1812, to F. A. Michaux, quoted in Allen, "Ornithology," 535, Wilson ignorant of Barton's need of financial aid.

2923 [Respectively, *Melanerpes lewis* G. R. Gray, 1849; *Piranga ludoviciana* Wilson, 1811; *Nucifraga columbiana* Wilson, 1811. AOU. ITIS.]

Cyclopaedia, and had employed Wilson as an assistant editor.[2924] The Reverend Ashbel Green wrote to Wilson that he had prepared an account of the Natural Bridge he wished to see included in the *Encyclopedia*, but he had loaned the journal to Barton, who had not returned it. Barton had published Green's "Notices of the Sulphur Sweet, and other Mineral Springs, in the western parts of Virginia, from a ms journal" in his *Philadelphia Medical and Physical Journal* in 1805; Conrad was the publisher. Wilson wrote for the journal to Barton:

> *Sir,*
>
> *Dr. Green having expressed a wish to see an account of the Natural Bridge introduced into the Cyclopaedia, and having offered to furnish the article himself, I wrote him the enclosed note, and received, in return, his answer on the back of the same. On application to you, Mr. Bradford was referred to Mr. Conrad, who has sent Me the description contained in the 2d Vol. of the Literary Magazine, p. 441, which accompanies this, but which Dr. Green says is none of his. Anxious to procure as correct and interesting an account as possible of this natural curiosity, I have to request you would inform me where the Journal referred to is to be found, or by what means I can procure it.–I am sorry to put you to so much trouble, but I hope the circumstances of the case, will, in your mind, justify the application.*
>
> *I offer you the assurances of my Respectful esteem.*
>
> *Alex Wilson*[2925]

Of Rev. Green's article on the Natural Bridge we learned nothing further. Rev. Ashbel Green (1762-1848),[2926] who left Princeton College "to take charge of the First Presbyterian Church in Philadelphia," had been elected to the American Philosophical Society 16 January 1789, the meeting of Barton's election.[2927] He returned to Princeton in 1812.

After two years of field instruction and especially encouragement from Bartram, Wilson–he was then forty–launched the to-become-a-classic *American Ornithology* in the fall of 1808 with the publication of the first volume. Both to win subscribers and to observe more kinds of birds unknown to him, Wilson journeyed south as far as Savannah. He wrote to Bartram from there 5 March 1809, that he had met the English naturalist John Abbot,[2928] who had shown his "immense quantities of elegant butterflies, and other singular insects," adding that Mr. Abbot had been "here 33 years drawing insects and birds. I have been on several excursions with him...He has published, in London, one large folio volume...It is a very splendid work."[2929] Barton owned a copy of the "very splendid work," the *Rarer Lepidopterous Insects of Georgia*.[2930] Barton may have learned from Aloysius Enslen that Abbot was still living in Georgia, and that he was still drawing insects. Abbot sometime later sent Barton "a roll" of three drawings he had purchased. These had been addressed to Wilson, who reported to Abbot 23 January 1813, "I myself delivered to Dr. Bartons." Wilson did not mention seeing Barton's copy of *Lepidopterous Insects*, the first copy that had reached America–not even Abbot had known of the publication of his work! The Abbot drawings referred to have not

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2924 *The Cyclopaedia, First American edition...* (Philadelphia, 1806-1818, 41 vols. plus pl.). Witmer Stone in *DAB*.

2925 Barton papers, APS.

2926 Robert H. Nicholas in *DAB*.

2927 APS, "Minutes," 168.

2928 Elsa G. Allen, "John Abbot, Pioneer Naturalist in Georgia," *Georgia Hist. Quart.* 41 (1957): 143-157; Vivian Rogers-Price, *John Abbot in Georgia, the Vision of a Naturalist Artist (1751-ca. 1840)* (Madison, Ga., 1983), 16-51; Ronald S. Wilkinson, "John Abbot's London Years," *Entomol. Rec.*, 96 (1984): 110-123, 165-176, 222-229, 273-285.

2929 Ord, "Wilson," lxvii.

2930 *The Natural History of the Rarer Lepidopterous Insects of Georgia...collected from the observations of Mr. John Abbot...by James Edward Smith* (London, 1797, 2 vols., 104 pl.). Ewan, "Barton's Library."

been located, and we have seen no letters between Abbot and Barton. Wilson's Savannah visit of 1809 was the only occasion on which he met Abbot, but we know from the few surviving published letters of the important help that Abbot gave Wilson.[2931]

Barton also subscribed to Wilson's *American Ornithology*, signing his copy with his characteristic flourishes.[2932] Enthusiastic newspaper notices of Wilson's account of birds, the first such with illustrations to be published in America, were by DeWitt Clinton during his term as mayor of New York City. Later in his inventory of our progress in natural history he praised its features: "The exactness of his likeness, the fidelity of his descriptions, his interesting representations of the manners of birds, and talents for observation and delineation which are displayed in every part of his elaborate work, justly place it in the first rank of writings on natural history."[2933] On 16 April 1813 Wilson was elected to the American Philosophical Society.[2934] He had given up his school teaching to travel for subscribers to his masterpiece. Barton had too much at stake, too many interests and obligations to confine himself to natural history. Was there not a bit of envy, when Wilson succeeded so grandly?

Torpidity

"Credulity," concluded Barton, writing in 1807, "is one of the most injurious features in the character of the naturalist, as well as the historian. Its influence, in one individual, is often felt and propagated through many ages...It was his credulity, more than anything else, which soiled the immortal work of Pliny on *Natural History*...How much do we feel for Tacitus, the manly and the energetic Tacitus, when he tells us, in his *Annals*, that...after a long vicissitude of ages, the *Phoenix* arrived in Egypt." Then Barton goes on to collect the most extravagant stories relative to the life and habits of this miraculous bird; some of which, indeed his judgment leads him to reject, observing:

> *...that in the account of the Phoenix there is no doubt a mixture of fable...but that this bird (says the great historian), from time to time, appeared in Egypt, seems to be a point sufficiently ascertained...The beautiful fable of the Phoenix may have taken its rise from the history of the periodical returns of a Comet...The Trochilus, like many other birds, is susceptible of, and actually does sometimes pass into, the torpid state; a state in many animals, extremely similar to that of complete death: for who, but the most keen-eyed physiologist, can mark, in many instances at least, the line between life merely interrupted, and life finished, or at an end?*
>
> *...it should be the constant aim of the naturalist to describe and paint nature as she is.*[2935]

Just as with fascination among serpents, torpidity among birds—swallows and martins in particular—was another controversial topic Barton reviewed with some vigor. Barton had concluded in *Fragments* that caprimulgids—poor-wills, chimney swifts, etc.—may "hiemate" (spend the winter) as he preferred to term it, in hollow trees, rock crevices and the like "in a lethargic state," but that swallows do not hibernate in wet lake bottoms. The many early accounts of the latter belief brought deserved dispute. To mention only a few references before 1800: Peter Kalm (1753); Samuel Dexter (1785); Asa Packard (1794); and Samuel

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2931 E. Stone in *Auk* 23 (1906): 361–368.
2932 Ewan, "Barton's Library."
2933 Clinton, *Discourse*.
2934 APS "Minutes," 439.
2935 *Discourse*, 66–67, 69.

Williams (1794) all reported with more or less conviction on submersion of swallows.[2936] Barton would have known these. On 14 September 1795 Barton wrote to William Bartram:

> *Dear Friend*
> *I have long been anxious to have, at large, your sentiments upon the subject of the migration of our Swallows. I wish you would oblige me by communicating them to me,—as soon as you conveniently can.*[2937]

Although we do not have Bartram's direct answer, it is clear that Bartram considered them migratory.

In 1798 Peter Cole communicated a letter to Mitchill "On the Disappearance of Swallows in Autumn," in which he observed that on a pond of fresh water in the vicinity of New York "some of the birds appeared to run on the surface of the pond, and in the twinkling of an eye, disappeared under the water and rose no more."[2938] On the Continent the subject had been alive. George Edwards, whose *Essays upon Natural History* (London, 1770) was in Barton's library, had given three explanations for the disappearance of swallows, including their going to the bottom of lakes (p. 109), but Gilbert White in his "Naturalist's Journal" for 6 May 1774, was "more in favor of migration than of a torpid state."[2939]

Barton repeatedly requested correspondents to send him "Facts, Observations, and Speculations" on any subject of natural history. He would base his judgments on an accumulation of data, his own observations, his wide reading of the literature, and from "reliable sources," and so make his decisions. As an example of the popular knowledge of the time, Priestley, on receiving a copy of *Fragments* commented from Northumberland, Pennsylvania, 27 November 1800:

> *I am very little of a Naturalist, but I own I cannot help think that if the great body of European swallows crossed the Mediterranean, they would be found in great numbers in Africa, and this is not found to be the case. A servant of the Marquis of Lansdown told me that on the falling in of the bank of a river in Ireland he found a large hole full of swallows. He carried away a basket full of them, and several came to life in a warm room. These could not all have been sickly ones, unable to fly away.*[2940]

Priestley had not learned the time of year. Had there not been an opening from a river bank?

At a meeting of the American Philosophical Society on 7 May 1802 Barton read a paper by the late Col. Frederick Antes "On the hibernation of swallows," and it was referred to Coxe and Peale for approval of publication. It appeared in 1804 in the *Transactions*.[2941] Antes had stated that swallows taken from the mud had revived, and were kept alive from February until the arrival of migrant birds. Had Barton accepted the story at face value? George Ord, close friend and confidant of Alexander Wilson, evidently thought so. In his Letter to Lacépède, dated 31 October 1802, Barton had written:

> *It is now completely ascertained that some of the American species of swallows remain among us in a torpid state. They retire into the crevices of rocks, into the hollows of trees, and other similar situations, and rest, for*

2936 McAtee, "Torpidity."
2937 Bartram papers, 1: 9 verso, HSP.
2938 *Med. Repos.* 2 (1798): 178–180.
2939 Walter Johnson, ed., *Gilbert White's Journals* (London, 1931; Cambridge, Mass., 1970), 82.
2940 Barton correspondence, f. 46, HSP.
2941 *Trans. Amer. Philos. Soc.* 6 (1804): 56–60.

> *some months, in a lethargic sleep more or less profound. The species concerning which I have the most correct information, as to what regards that torpidity, are the purple martin (hirundo purpureo), and the chimney bird (hirundo pelasgia*[2942]*). Both of these species, I repeat, do sometimes become torpid in the climate of Pennsylvania...But I still adhere to my former opinion: I contend that the great body of American swallows, of different species, are migratory birds. These facts show how much birds can accomodate themselves to different situations...Even the little hummingbird...is sometimes overcome by the colds of our climate.*[2943]

Among Barton's miscellaneous papers are page proofs, 21-36, concerning hibernation with the running head "Relative to Swallows." Page 30 carries the date "April 11, 1807." Was this part of a projected memoir on the "migration and torpidity of swallows"?

Totally discrediting the whole idea of birds' hibernating, Ord suggested that from Alexander Wilson's account of the migration of swallows Barton "was made sensible that he had been writing upon a subject of which he had little personal knowledge," and so it was "not strange that the very extensive inquiries of our learned professor should have had a result so different from those of Wilson, an ornithologist infinitely better qualified than himself to investigate a question of this kind," torpidity. Such a paper, said Ord, should never have been accepted by the Society.

Wilson wrote:

> *Away with such absurdities! they are unworthy of a serious refutation. I should be pleased to meet with a man who had been personally more conversant with birds than myself, who has followed them in their wide and devious routes—studied their various manners—mingled with them, and marked their peculiarities more than I have done; yet the miricle of a resuscitated swallow, in the depth of winter, from the bottom of a mill-pond is, I confess, a phenomen in ornithology that I have never met with.*[2944]

Reports continued to arrive. Robert Dunbar of Winchester, Virginia, sent a paper to the Society 21 January 1803 "On the submersion of swallows" that was favorably reported for publication at the next meeting. Peale was present at both meetings. "A Jerboa taken up in the *Torpid State* by Mr. Bartram" was exhibited by Barton at the meeting of 18 February. On the 26th Barton received a letter from Nathaniel Chapman, now a pupil in Edinburgh, requesting information on torpidity for a medical friend. Andrew Ellicott contributed "Hints relative to swallows" to Barton's *Philadelphia Medical and Physical Journal*.[2945] This brought a letter from his recent pupil, William Darlington, now practicing in West Chester. It was read to a meeting and referred to a committee which reported approval for publication 4 November 1808.

> *West-Chester Penn. Decem. 17th 1807*
>
> *Dear Sir*
>
> *Seeing some hints in the second Supplement to your Medical & Physical Journal, respecting the manner in which Swallows pass the winter*

2942 [The Purple Martin is now known as *Progne subis* L., 1758; the Chimney Swift as *Chaetura pelagica* L. AOU. AUD.]

2943 *Philos. Mag.* 22 (1805): 204.

2944 Ord, "Wilson," [1871], cxxiv.

2945 *PMPJ* Suppl. 2 (1807): 116-118.

season, it reminds me of having seen a number of those birds during my passage to Bengal last year;—and I find by referring to my notes that it was on the 11th November, 1806, we observed them; being than in Latitude 6 degrees 30' North, and in 20 degrees west Longitude from Greenwich. They appeared to be skimming the surface of the ocean with as much vigor and vivacity as though they had just descended from their sheds to glide over our meadows. In the evening, however, they inclined to settle about the channels of the ship, and next morning had all disappeared. Whether they had migrated from Europe to those latitudes, or from what part they came, I cannot pretend to judge; but the circumstance of their being seen there at that season of the year, and at such a distance from land, tended to confirm my belief in the opinion which you have so long advocated, that the Hirundo Rustica[2946] *is really a bird of passage, like all those which annually visit us in the vernal season.—However it might have been, I thought a simple statement of the fact, detached as it is, would be acceptable to you, who are so zealously devoted to the discovery of truth in every department of natural science. With greatest respect, I am, dear Sir, Yours &c.*

W. Darlington[2947]
attention Mr. Fairlamb

Again Barton returned to the subject in a seven-page review of "An Essay on the Torpidity of Animals, by Henry Reeve, M.D.,"[2948] which he sent "To Mr. Tilloch" for publication in 1810. Reeve's essay "has afforded me much amusement, and some instruction;...It is, however, I think, less replete with new facts and experiments, and with original and enlarged views of the nature and phenomena of *Torpid Life* than might have been expected, considering the respectable author's opportunities of acquiring information, and the length of time he has had the subject under his consideration.

Having myself, for several years, been engaged in inquiries relative to the same subject, in various classes of animals, but especially in the Mammalia, the Birds, and the Reptilia (Amphibia of Linnaeus), I hope to be able, at no very distant period, to publish the full result of my researches and experiments. I shall then, with that candour, which, I trust, will never forsake me in my inquiries as a naturalist, point out some of the errors (as I now conceive them to be) of Dr. Reeve's work.

Barton believed most of the birds are migratory as stated in his *Fragments*, but he also believed accounts from "reliable informants" that sometimes swallows and hummingbirds, and maybe others do become torpid. He promised to investigate further. Dr. Reeve, he felt, assumed his informants wrong without investigating.

I have, at this time, in the press, a memoir on the migration and torpidity of these birds. I am confident that I shall be able to convince every candid philosopher, that great numbers of swallows, of different species, do occasionally pass into a state of torpidity, more or less profound, not merely in some remote quarter of America, but in the vicinity of our capital cities, where there are some men of genuine

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2946 [*Hirundo rustica* L., Barn Swallow. AOU. AUD. ITIS.]
2947 Barton papers, APS. Darlington copy at West Chester State College.
2948 Dr. Henry Reeve (1780–1814), a founder in 1805 of *Edinburgh Medical Journal* (*DNB*).

> *observation and inquiry, and who are as little propense to believe the marvellous in natural history, as any philosophers elsewhere.*
>
> *I do not suppose that all the swallows of North America become torpid.*
>
> *But,* [he continued], *subsequent and very extensive inquiries have convinced me, that the instances of torpid swallows are much more frequent than I supposed they formerly were.*[2949]

His memoir was never published. Ord accounted for Barton's not continuing on the subject this way:

> *Who will venture to say that he did not, by this suppression, manifest his discretion? When Wilson's volume, wherein the swallows are given, appeared, it is probable that the author of the 'Fragments' was made sensible that he had been writing upon subjects of which he had little personal knowledge; and therefore he wisely relinquished the task of instructing philosophers, in these matters, to those more capable than himself of such discussions.*[2950]

Ord identified the problem when he wrote:

> *Naturalists have not been sufficiently precise when they have had occasion to speak of torpidity. They have employed the term to express that torpor or numbness, which is induced by a sudden change from heat to cold, such as is annually experienced in our climate in the month of March, and which frequently affects swallows, to so great a degree as to render them incapable of flight.*

W. L. McAtee collected 152 literature and archival references to "torpidity in birds" and classified them among fifty-three different kinds of birds.[2951] He found that most of the references, sixty-four, concerned swallows and dated from Jean-Baptiste Du Tertre (1610-1687), *Histoire Générale des Antilles* (Paris, 1667).

As late as 1946 Edward C. Jaeger and two companions discovered a hibernating whip-poor-will in a crevice in the Chuckawalla Mountains in Southern California. They monitored it over four consecutive years in the same spot.[2952] Oliver P. Pearson has summarized more recent literature. He concluded that verifiable torpidity occurs among whip-poor-wills, nighthawks, swifts and hummingbirds, all related taxonomically and all influenced by diminished food supply during cold spells. Swallows may become torpid "but physiological measurements are lacking for them."[2953] Wilson had not known a hibernating whip-poor-will.

An "argument to prove migration of swallows" was corroborated and submitted to the *Journal of Natural Philosophy* in 1812 by a Dr. Trail. Captain John Thomson of the ship *Jane* of Lancaster, England, reported that many swallows and martins appeared on deck from 17 to 21 May 1807, usually from four until eight p.m. Most died "because of a strong breeze and foggy weather," but the direction of the wind was not unfavourable for the voyage from the West Indies. Swallows this time of year, he wrote, are seen to quit the coast of Senegal and to

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2949 *Philos. Mag.* 35 (1810): 241-247.
2950 Ord, "Wilson," [1871] cxxviii.
2951 *Amer. Midl. Naturalist* 38 (1947): 191-206.
2952 *Taxon* 36 (1987): 403.
2953 "Torpidity of birds," *Bull. Mus. Comp. Zool.* 124 (1960): 99-103.

land in Britain lean and tired, but are not carried back from Britain by storm.[2954] Probably as a response to this article Barton queried Charles Giguilliat, a former pupil who was practicing in Savannah. Giguilliat responded 23 November 1813:

> *In answer to your inquiries whither the Swallow or hummingbird winter among us from the best information I can collect, I believe they do not. Our winter is rather too severe for them as have always some frost, and sometimes a little Snow. I suspect they retire to the more genial regions of the south, as I have observed them to make their first appearance in the spring. I believe generally in the month of April.*[2955]

DeWitt Clinton had decided by 1815 that "it is time that the submersion of swallows, and the fascination of serpents, should be banished from our natural history."[2956] In Europe Thomas Ignatius Maria Forster, M.D. (1789–1860), later a corresponding member of the Philadelphia Academy of Science, in 1808 reviewed in book form the "brumal retreat of the swallow." His sixth "edition" (London, 1817) included only Catesby and Kalm as American references among his seventy-eight authors listed. Forster's conclusion: swallows generally migrate, may become torpid, but do not necessarily hibernate.[2957]

Nuttall, who in his classes at Harvard used the American edition of William Smellie's *Philosophy of Natural History* (Philadelphia, 1791) with its widely noticed discussion of torpidity in birds, continued his observations or relied on Wilson. He wrote that Chimney swifts formerly sought a "large, hollow tree, open at top" usually buttonwood (Sycamore, *Platanus occidentalis*) or elm (*Ulmus americanus*), "in the remote and unsettled part of the country." He added, "these well-known *swallow-trees* are ignorantly supposed to be the winter quarters of the species, where, in heaps, they doze away the cold season in a state of torpidity; but no proof of the fact is ever adduced."[2958]

From today's vantage point Barton's views seem less incredible than when George Ord, no friend of Barton's, castigated them in the preface of his "Life of Wilson":

> *I know of but <u>two</u> naturalists in the United States whose opinions ought to have any weight on the question before us, and these are William Bartram and Alexander Wilson, both of whom have recorded their testimony, in the most positive manner, against torpidity." Then he hurled Barton's own words back at him when he quoted from Barton's Memoir concerning various Species of Serpents (p. 7), "Naturalists have not always been philosophers. The slight and superficial manner in which they have examined many of the subjects of their science; the credulity which has accompanied them in their researches after truth; and the precipitancy with which they have decided upon many questions of importance; are proofs of this assertion.*[2959]

Ord's more careful reading of Barton's prolix accounts would have shown him that he, Wilson, and Bartram were closer in agreement.

2954 *J. Philos.* 30 (1812): 213–216.

2955 Barton papers, APS.

2956 DeWitt Clinton, *Discourse*, 30.

2957 For the complicated history of Thomas Forster's *Observations on the brumal Retreat of the Swallow* (London, 1808) and later printings, see Wood, *Lit. Vert. Zool.*; and William Herbert Mullens and Hatty Kirke Swann, *Bibliography of British Ornithology...* (London, 1919), 214–216. Author presentation copy of ed. 5 (London, 1817) is in the APS library.

2958 Thomas Nuttall, *A Manual of the Ornithology of the United States and Canada, Land Birds*, ed. 2 (Boston, 1840), 727.

2959 Ord, "Wilson," [1871] cxxvii and fn.

As early as 1799 in his *Fragments* Barton had declared (p. xii) that finding a few birds in the torpid condition in winter in the North, "—a few swallows, a few turkey-buzzards, a single Humming-Bird,"—which are declared migratory, only strengthens the conclusion that they are indeed migratory, otherwise many more would be found in a torpid state in Pennsylvania in winter. For several pages in his *Fragments* he cautiously referred to the torpid *individuals*, observing that migration was the rule.

Chapter XXV

Mammals

"An Oppussum is a beast as big as a pretty Beagle of grey Cullor, yt hath like a swyne, eares, Feet, and Taile like a Ratt, she carryes her young ones vnder her belly in a piece of owne Skynn, like a bagge, which she can open and shutt, to lett them out or take them in as she pleaseth, and doth therein lodge, carry, and succle her young, and eates in tast like a Pig."
–William Strachey in 1612 in his *Historie of Travell into Virginia Britania.*[2960]

The Opossum

Ralph Hamor, *A True Discourse on the Present Estate of Virginia* (London, 1615), gave minor variations to this description. John Banister's report to his "much Esteemed Friend," Dr. Robert Morison at Oxford University, was "Opossums, a sort of Creature with a false belly, into which it receives its young when in danger; it hangs by its Tayl, & is frequently shown in England for a Sight."[2961] When William Byrd II returned to London as a representative of the Virginia Assembly, he took with him a rattlesnake and an opossum, exhibiting them before the Royal Society on 20 July 1697. The physician Edward Tyson, best known for his monograph on the "Chimpanzee" [*Pan troglodytes*], later dissected and published on Byrd's specimen of the opossum. Tyson's paper was cited by Linnaeus when he proposed *Didelphis marsupialis* in his *Systema Naturae,* ed. 10. However, Linnaeus mistakenly associated two species, one Brazilian, first made known in 1500 by Pinzón[2962] and known today as *Didelphis marsupialis*, and the Virginia "animal mirabile," distinguished after Linnaeus's death as *Didelphis virginian.* Robert Kerr (1755–1813), surgeon to the Foundling Hospital in Edinburgh, who translated several works for the English public, published an unmistakable description in *The Animal Kingdom* or *Zoological System of...Linnaeus, Class I. Mammalia* (London, 1792), based on the exhibits he saw in Ashton Lever's museum in London. Thomas Pennant owned a copy, which is now in the Royal University Library at Uppsala. Barton did not own a copy, but he knew Pennant's emendation of the Linnaean account published in 1790. Evidently Barton did not meet Kerr in Edinburgh or correspond with him later.

Reminiscent of Tyson's account of the Virginia animal was Catesby's first hand report:

> *I have many times seen the young ones just born, fixt and hanging to the Teats of their Dams when they were not bigger than Mice; in this State all their Members were apparent, yet not so distinct and perfectly formed but they looked more like a Fetus than otherwise, and seemed inseparably fixed to the Teats, from which no small Force was required to pull their Mouths, and then being held to the Teat, would not fix to it again. By what*

2960 Hakluyt Society edition, edited by Louis B. Wright and Virginia Freund (London, 1953), 125.

2961 J. Banister, Falls of James River, Virginia, 6 April 1679. Ewan & Ewan, *Banister,* 43. Rev. John Clayton, who visited Banister in 1686, published on the opossum in *Philos. Trans.* 18 (1694): 122. Ewan & Ewan, *Banister,* 55 and 58.

2962 Vincente Yadez Pinzón (1460–1524), navigator "who followed in the footsteps of Columbus," Philip Hershkovitz in *Fieldiana, Zool.* 39 (1987): 18.

Method the Dam after Exclusion fixes them to her Teats, is a Secret yet unknown.[2963]

For friends in Paris who had expressed curiosity, Jefferson wrote to President James Madison in 1788 about sending opossums and red birds along with acorns to France.[2964] In a letter dated 8 May 1791 he reported to Rittenhouse the observations of his nephew, Thomas Mann Randolph, that the sphincter was "so strongly contracted as to render it difficult to find where we were to enter our fingers and extremely difficult to introduce them."[2965] Rittenhouse the same day answered, concluding that the facts seem "more nearly to connect the Vegitable and animal economy."[2966]

Characteristic unnatural history of the opossum in Barton's time appears in William Bullock's *Companion* to his London museum in Piccadilly: it "inhabits the warmer parts of America, climbs trees, and springs from branch to branch by means of its strongly prehensile tail."[2967]

Barton was captivated when at Peale's Museum he was able to observe a female opossum with nine young that Dr. John Foulke had presented to Peale.[2968] The gift had been announced in the *American Daily Advertiser*: "live female opposum with its young in embryo visible, through the aperture of the bag, to the eye of the observer...far exceeds all the other parts of his exhibit."[2969] Barton made careful notes at the Museum:

Opossum

———

See pages 5, 6, 23, 24, and 25.[2970]

———

November 10th, 1794.—? Does not superfetation take place in the opossum? ?Are not the young excluded from the uterus at different times?—Mr. Pennant says, 'During the time of this second gestation,' he is speaking of the young ones being in the marsupium, 'the female shows an excessive attachment to her young, and will suffer any torture rather than permit this receptacle to be opened; for she has power of opening it by the assistance of some very strong muscles.' vol. 2d p. 19 & 20. This is certainly not always the case. See page 6 of this book.—?Is Didelphis dorsigera (of Linnaeus) different from our Opposum?...[2971]

2963 Mark Catesby, *Natural History, Ed. 2*, 1: xxix. Catesby cites Tyson in *Philos. Trans.* no. 239 and 290, p. 1565.

2964 Betts, *Jefferson's Garden Book*, 136.

2965 Boyd, *Jefferson Papers*, 20: 382.

2966 Boyd, *Jefferson Papers*, 20: 383.

2967 *A Companion to Mr. Bullock's London Museum and Pantherion*, ed. 12 (London, 1812): 28.

2968 On Foulke, Butterfield, *Rush*, 251–252. Sellers *Peale's Museum*, 38; illustration, 39. APS "Minutes," passim.

2969 *Dunlap and Claypole's American Daily Advertiser*, Friday, 2 May 1794. Peale collection, APS.

2970 Numerals refer either to a Barton or Pennant manuscript or manuscripts they exchanged.

2971 *Didelphis dorsigera* L. *Systema Naturae*, ed. 10, 55, 1758. A Surinam animal based from references therein on illustrations of (1) Albert Seba, *Locupletissimi Rerum Naturalium...Descriptio...* (Amsterdam, 1734–1765, 4 vols.), by an Amsterdam apothecary whose specimens were dispersed after his death; and (2) Maria Sibylla Marian, *Metamorphosis Surinamensium Insektorum Surinamensium* (Amsterdam, 1705). She had visited Surinam in 1700–1701. Barton also in his *Facts relative to the Opossum* referred to a Latin description from "Benzoe" without title as "Lib. II. p. 215" [Part 2]. The Italian traveller, Girolamo Benzone (1519–1565), born in Milan, was the author of *Historia del Mondo Nuevo...* (Venice, 1565). This work was re-edited many times in several languages, one by Jean de Lery as *Historia Indiae Occidentalis, Tomus Duobus Comprehensa...* (Geneva, 1586). The second part on Brazil, not visited by Benzone, was by de Lery. Copy in LCP. Sabin, *Dictionary*, 4790–4807; Ruben Borba de Moraes, *Bibliographia Brasiliana* Vol. I (Rio de Janeiro, 1958), 85.

November 14th 1794. A young man in market, informed me that the opossum eats 'acorns and roots.' He said, if you strike it, it feigns death.— He has heard of an opossum having ten young ones.—

The Chevalier d'Abeville observed that his male and female opossum were a long time (he implies at least one hour) in the act of copulation. See Chastellux's Travels, vol. 2d. p. 426.[2972] *This length of copulation it is not difficult to account for. Mr. W. Cowper found that the opossum has not 'any Vesiculae seminales near the Vasa deferentia.' p. 172.*[2973] *Afterwards, he says, 'there are no vesiculae seminales in this Animal, as in Dogs, Weasels, &c. yet we find its Penis without a bone in it, as in those Creatures; but then we meet here with additional Contriveances to maintain its Erection: Not only the Sphincter Muscle of the Cloaca of the Male opossum; but that of the Female also closely embraces its Penis in Coition, and effectually retard the refluent Blood from its Corpora Cavernosa, by compressing the veins of the Penis. Nor could the Penis of this Animal be'* [end of note missing][2974]

Barton had written for information to Peck in Boston, who answered 6 October 1794 that:

The only Opossum I ever saw was at Portsmouth 2 or 3 years since, but could not examine it. I was about to buy it, but it made its escape before its owner had concluded to accept my offer. It was a male & as Linne arranges this genus according to the number of mammae, I was not entirely satisfied as to the Specific character. It was taken in York woods & was the only one remembered to have been seen this part of the U.S.[2975]

Quite expectedly, Barton turned to Heckewelder with a list of queries dated 13 January 1796.[2976] Heckewelder responded 2 February from Bethlehem:

There are here, & in these parts, few People that have any knowledge of the Opossum. The few which have, are such Persons who have resided in North Carolina, were they are plenty; & their account runs to this: That the young Opossums are formed in the true uterus (not in the marsupium) that they produce their Young in Harvest time, & that they then place them in the marsupium, and that they are fond of Eggs.

While I resided on Muskingum, (a Country where these animals are plenty), I had an Opportunity of seeing & examining them at all Seasons of the Year except for about 2 or 3 months in the Winter, where they keep close at their quarters. Whenever I have shot, or taken them, or whenever Indians have brought them in, I have examined the Marsupium, but never found Young ones earlier in, than the latter end of June, but generally about the middle of July. Their young are exceeding small when first produced, & appear much like young naked Mice or Ratts, & have from 6

2972 Barton's copy at the APS. François Jean Chastellux, *Travels in North America*, ed. 2 (London, 1787, 2 vols.), Howard C. Rice, editor (Chapel Hill, 1963), 462–468, 613–614. D'Abeville was with the French army stationed in America.

2973 William Cowper, *The Anatomy of Humane Bodies* (Oxford, 1698). See also *Philos. Trans.* 21 (1699/1700): 364–369.

2974 Barton papers, APS.

2975 Barton papers, APS.

2976 Gilbert collection, CPSP.

to 7 at a time. These I have frequently & repeatedly taken out of the Marsupium & placed them first at the distance of a foot from the Dam, when tho ever so small & seemingly blind, they have crawled direct to the Dam & entered the Marsupium again. When as big as Mice, I have even placed the Young at the distance of 4 & 5 Yards from the Dam, & they have crawled direct back, & entered the Marsupium again. The Young Opossums do not grow nigh as fast as a young Raccoon,[2977] *for the Raccoons copulate in February (or as the Indians express themselves) in the 2d Moon of the Year, and by May, they are of a good size already. In the Year 1775 in a morning walk on the Muskingum River, I accidentally hit upon 2 Possoms while in the act of Copulation, & by what I observed there, I can never be led to believe otherwise: than that the young ones are formed in the true uterus. Neither did ever an Indian signify such an Idea to me, but on the otherhand told me: that this Schevandican, or (Pouch) served them to protect & keep their Young Warm, as also to travel with them about, when in search of Food, which they have often occasion to look for a great distance, they living chiefly on Nutts, Acorns, Ilachiachnut*[2978] *(or Earth beans), black-berries &c. With respect to the above conversation on Copulation, I am not positive whether it was about the latter end of March, or beginning of Aprill. So much I am certain, that it was in the Spring, & before the Woods were green. When I have accidently hit upon them in the Woods; they have never either attempted to escape, nor to defend themselves, but have lain themselves down on the Ground, shutting their Eyes, so as to all appearance they were quite dead. In this condition I have frequently taken them up by the Tail & carried them for Miles together home, without their ever giving the least sign of Life in them. Here I have placed them at a small distance from me on a Stump, or Log, laying them sometimes on their Back, & eagerly watching their motions; when after some time they have opened their Eyes, & looked arround, ready to run off, which I have suffered them to do sometimes (I myself being hid from them) whereas at other times, I would give some sign, either by calling coughing or otherwise, upon which sound, they would put themselves immediately in their former position.*

Nature has provided for this defenceless Animal, so that it may in a great measure escape its Enemies & protect its Young.

The Indians view this Animal as a Curiosity; but I never observed them have any superstitious regard, or dislike for them. I do not know the Name the Shawnees have for this Animal.

Since writing the above Mr. V. Vleck has handed me a German publication, in which (among other Animals) this is also treated of, tho' not with that accuracy it deserveth. Here it is said 'This Animal is a Native of America. It liveth upon the Sugar Cane [Saccharum], Eggs, & Blood. maketh great havock among the Birds, since after killing them, it only sucketh their Blood. It climbeth on Trees, & hanging itself by the Tail to a Limb, watcheth Its Opportunity of falling upon, & destroying such small Animals as pass by. It has yearly from 4 to 7 Young ones, which when produced first, are not so large as a Welch-nut; neither are these young come to half perfection, for they cannot see, nor crawl, nor even stir themselves; & yet they are able to suck. As soon as their Young are produced, the Dam places them with her Paw into a Pouch, which is

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2977 [*Procyon lotor* L., 1758, a placental mammal quite different than the marsupial opossum. MSW.]

2978 Heckewelder's note: "I have not the Linnean name." Earth beans: Ground nut, *Apios americana* Medikus.

between her hind leg! &in which 8 Titts are filled with Milch. Soon as these Young are in the Pouch, each of them take a Tit into its Mouth, & do not let go their hold for at least a fortnight, so that to appearance one should imagine the Young were grown fast to the Old one. From this time they live entirely by sucking untill they are about the Size of a common House Mouse, when the Dam turns them out of the Pouch & teaches them to provide for themselves, &c. When the Opossum observes an Enemy at a distance, it calls its Young together, & places them in the Pouch, & try's to get off with them. But if so as, that it is overtaken, or whenever it is come upon of a sudden, it will instantly drop down as if dead; & will sooner suffer Fire to be applied, yea its feet & Ears to be cut off, & all its Young taken away, rather than Stir or give a Sign of Life. But after it believeth the Enemy gone it will slyly open its Eye, look arround, & shear off':

The first part of the above account I believe to be false, namely that respecting its food &c. Where does this Sugar Cane [Saccharum] grow, they are to live upon (except it be in the W. Indies). Neither are they calculated to catch Birds or Small Animals &c. That they may be fond of Eggs I readily believe, Many other animals do also. That part respecting their Young & the imperfect state they are in when first delivered–that they are of slow growth, is right. Whether in cutting off their Feet & Ears, & applying Fire to them should have no effect, I know not since committing such cruelties never entered my Mind.

...Believe me to be Dear Sir, your very Affecte. friend.

John Heckewelder.[2979]

Barton acknowledged on 12 February 1796 the "information...concerning the opposum is very curious and valuable," and pursued the subject:

I wish, should you think of it that you would endeavour to ascertain the precise time when this singular animal copulates. The Indians...may throw some light upon the subject. In the meantime, I greatly thank you for the fact, that they copulate 'before the woods were green.'[2980]

On 16 April Barton received a female and recorded the following observations: On rate of growth: "Young ones grow fast." He detached a young one on 17 April, weighed 9 grains; another 25 April, 20 grains; another 5 May, 41 grains, and another 11 May, 67 grains. He sent the results 17 May to Heckewelder, "In good time you shall see the results of all my observations on this curious subject."[2981]

John Davis wrote from Philadelphia to Belknap 28 April 1796 after a visit to Barton's "bachelor quarters" that "Dr. Barton has two female opossums in different stages of pregnancy, which now engage his attention. I think he will be able to furnish a more compleat history of this very singular animal than has hitherto appeared."[2982] Rittenhouse also observed Barton's studies and proposed that together they investigate how the young are moved to the pouch.[2983] In May Mr. John Hasse arrived in Philadelphia bearing a letter from Heckewelder, who wished Barton to show him the opossum.[2984] On 29 August Barton again queried Heckewelder "How far north have you known the Opossum? Have you seen more than one

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2979 Barton papers, APS.

2980 Dreer collection, Physicians, HSP.

2981 Gilbert collection, CPSP.

2982 MHS.

2983 Hindle, *Rittenhouse*, 362.

2984 Barton papers, APS.

species of the genus?"[2985] Had Heckewelder published his own careful observations they would nicely have complemented those of Jonathan Carver, and won for him an even wider audience than for his work on Indian languages. Barton had determined that the Lenapes called the opossum *Woapink,*[2986] meaning "White face," and had also asked Heckewelder what name was used by the Shawnee.

Barton published in his *Journal* in 1805 under "Miscellaneous Facts and Observations,"[2987] that Cuvier had found a fossil *Didelphus* quite unlike those known. "This discovery is more important" writes Barton, since Europe does not have at present a native species nor any related, and so it must be associated with a remote period of the Earth. He has made considerable progress in anatomical and physiological inquiries and has given the animal the name *Didelphus Woapink,*[2988] he writes. He intends two memoirs, "with a number of fine engravings representing the progressive evolution of the parts of the embryo and fetal opossums," and female organs of generation. The second will be "restricted to marsupial and dorsal gestation which has already been transmitted by a letter to Roume[2989] of Paris by whom, it is probably, it will be published." Barton himself published the letter as *Facts relative to the Opossum* in 1806.[2990]

In his "Zoological notebook" Barton recorded "May 6th 1806. This morning I examined the marsup[ium] of Enslen's opossum, but could see no young ones."[2991] Although Barton was, as Hartman remarks, "usually quite objective in his natural history," he let slip this bit of sentiment: "'I have seen the mother, when the marsupium is forcibly opened to bring into view the contained embryos, manifest her distress by a kind of supplicating manner–and evidently shed tears.'"[2992]

On 17 September 1806, Barton wrote to "Mr. La Cepede" in Paris that he was sending two copies of a "small memoir" he had just had printed, one to be presented "in my name, to your illustrious National Institute." He carefully collated the current volume 97 (1807) of the Royal Society's *Philosophical Transactions* noting that the Society had received his paper. Copies of this memoir were also sent to William Roxburgh in Calcutta, and to Dr. Johann Abraham Albers in Bremen, an associate of the Royal Society of Göttingen. He hoped Albers would publicize the paper among his "German friends of Natural history."[2993] Albers responded 12 September 1807 that "Generation of the Opposum" would be printed in translation in the *Salzberg Medical and Chirurgical Journal.*[2994]

2985 Gilbert collection, CPSP.

2986 *Facts relative to the Opossum.*

2987 *PMPJ* 2 (1805) Pt. I: 155–156.

2988 [This name of Barton's, dating to 1806, is a later homonym for Linnaeus' earlier *Didelphis*, with *D. virginiana* described by Kerr, 1792.]

2989 Philippe-Rose Roume de Saint Laurent, naturalist, physician(?), agent of the French government in Saint-Dominique, and "Commissaire et ordonnateur de l'île de Tobago," *Catalogue Général des Livres imprimés de la Bibliothèque Nationale* (Paris, 1939), vol. 57. Roume was author of several books dealing with governmental problems in Tobago, since he was criticized by British doctors and suit brought against him (Sabin, *Dictionary*, 73468–71). On his return from the West Indies to Paris he visited Barton. "I think I informed you, when I had the pleasure of seeing you in Philadelphia," Barton wrote to Roume, the letter published in *Facts relative to the Opossum.* Roume came into correspondence between Jefferson and Barton in relation to Megatherium, though Boyd (*Jefferson Papers*), 14: xxx, did not identify him. Roume was author of "Verhandeling our den aart en behandleling der naturlyke en ingenieste kinderpokjes, der behandeling in eine West-Indische volkplanting opgestedldt," in *Verhandel, van het Maatschte* (Haarlem, Deel 21 (1784) Bl. 169), given in Adolphi Carl Peter Cullisen, *Medisches Schriftsteller-Lexicon* (Copenhagen, 1833).

2990 Printed sheets of pp. 49–52, signature "n," on the opossum were found among W. P. C. Barton's papers at the APS.

2991 Barton papers, vol. 24, APS.

2992 C. G. Hartman, *Opossums*, 118.

2993 Barton to J. A. Albers, 13 Feb. 1807.

2994 BPL. Alberts reviewed the paper in *Allg. Lit.-Z.* for April (1814), 634–638.

"The excellent animal psychologist" of Hamburg, Reimarus,[2995] son of a zoologist, was particularly interested in the opossum. His letter to Barton was delivered by his grandson, Herr Sieveking, on a visit to Philadelphia. Dated 25 June 1811 the letter full of stimulating questions read:

> *Dear Sir*
>
> *Your Kindness in Sending me Your Letter to Mr. Roume, on the Opossum, hath long demanded my gratefull acknowledgement, and i am very glad to find now an occasion, by de voyage of my grand-son, Mr. Sieveking, to bring this letter into your hands, as any correspondence is rendered so very difficult by our present wofull situation.*
>
> *I have read your observations with grat pleasure and wish but, to obtain once Your promised two farther Memoirs, in which i hope to find still exposed some circumstances, whereon i take the liberty to propose You Some questions. Thus, the condition of the foetus in utero is not yet plainly declared, whether they swim loose, or are attached by a navel-string, which however does not seem to be the case. As to their getting into the pouch, You mention (p. 5) that the mother does not put them there into with her paw, and You say, that they find their way by instinct to the teats, which I believe very well. But how do they find the way from ye exit of the uterus to the intrance of the marsupium? Can these helpless creatures crawl about the abdomen to get it, or can the oriface of the uterus, by some inclination of the body of the mother, be thus approached to the pouch, that by some effort of her She may throw or pour them into it immediately? And what may be the case with those that have the teats bare, without a pouch, for inst. Buffon's Marmose? To inform us about those facts an Opossum at the time of full gestation must be open'd, and another must be watched night and day about the time of bringing forth the young ones—I wish, You may get the opportunity of observing likewise Kanguroos, which have multiplied already in England. This animal being so much larger might let every point appear more distinct, and would offer perhaps some different circumstances—Mr. Home relates, that he found no appearance of a navel-string in the Young-ones and he makes the way of their getting immediately from the uterus into the pouch very probable: but yet I might wish an ocular witness of the fact—In his kangaroo he found two breasts, each with two nipples, which in the virgin state scarcely projected above the surface, but afterwards he represents them of considerable length. Now Sir! are they thus growing in pregnancy so that the foetus finds them ready, but can* [only] *attain to the tip for suction? Thus it seems to be the case by Mr. Home's account. I remember to have read, that some author pretends, that the number of teats were not definite, but that they* [only] *came forth according to the number of young-ones, or were provoked as hidden glands by suction. which is improbably as You have counted the number in an embryo. You have seen 16 of them attached to the teats: is this then the number common to this species of Opossum? Buffon saw a Marmose with 10 young-ones attached, and besides four nipples free, 'mais qui povoirsorient avoir ete teres et suies' however the foetusses could not change their teats, according to Your observation*

[2995] For notes on Reimarus (1729–1814) see Erwin Stresemann, *Die Entwicklung der Ornithologie...* (Berlin, 1951), 295 passim; also as *Ornithology from Aristotle to the Present*...foreword and epilogue...by Ernst Mayr (Cambridge, Mass., 1975), 293, and our Chapter XII, Continental and Latin American Correspondents.

(p. 12) before they were about fifty days old—And now, dear sir! let my desire of knowledge excuse the trouble I have given you by this long Letter. May You continue long in health and prosperity to be an honour to your Country, and may, happily 'from the Kingdoms rent' America, the future refuge of our Children, continue well-united, free, and more and more flourishing, by Sciences as well as by industry!

With this I take the liberty, to recommend the bearer of this letter, who goes thither for commercial affairs, to Your kind favour, as You may perhaps be able to give him some advice, or to address him to some of Your Friends. He will be ready to Serve You for any commissions You might have for Hamburg.

I am, Sir, with particular esteem Your very humble Servant J. A. H. Reimarus, M.D. and Professor aged near 82 years.[2996]

"Mr. Home" of Reimarus's letter was the English surgeon, Everard Home (1756-1832), who published "Some observations on the mode of generation of the *Kanguroo*, with a particular description of the organs themselves."[2997] The first eye-witness account of the unaided transference of an embryonic kangaroo to the pouch was made by Alexander Collie (1793-1835), ship's surgeon on Beechey's voyage, and published in 1830. Recent films explicitly reveal that the young crawl unaided up the mother's ventral surface, at first connected by the umbilical cord before attaching to one of the four teats in the pouch.[2998]

In introducing his *Additional Facts relative to the Opossum* in his answering letter to Reimarus, dated from Lancaster, 3 May 1813, Barton wrote that his conclusions "have never yet been published. But I have by no means relinquished my design or printing these memoirs, for which I have already collected a great mass of materials, and to which I am continually making additions. They will ultimately, I flatter myself, appear to greater advantage from the long delay which has unavoidably occurred in the publication of them." He concluded by saying that until he had fully determined whether the opossum fetus is "attached by a navel string" he cannot think of submitting his long promised two memoirs to the public. *Additional Facts relative to the Opossum* appeared in German translation in *Braunschweigisches Magazin* in 1814.

Reimarus had mentioned the introduction of the kangaroo "which have multiplied already" into England. The first birth occurred "in the royal domains at Richmond" in 1793.[2999] "This remarkable quadruped...may be considered in some degree as naturalized...and promise to render this most elegant animal a permanent acquisition to our country." Indeed "they bred so well in this country that the Exeter 'Change usually had a few on show."[3000] Reimarus seems to assume that Barton was familiar with kangaroos. Actually there is no mention of kangaroos in the accounts of Peale's collections. King Frederick's zoological garden near Stuttgart exhibited two kangaroos in 1812, but the first zoo in the United States was in Philadelphia in 1859, and there is no record of the kangaroo.[3001]

2996 Barton papers, APS. [Kangaroos such as the type genus *Macropus* Shaw, 1790, belong to the marsupial family Macropodidae. MSW.]

2997 *Philos. Trans.* (1795): 221-238; (1808): 304-312. *DNB.*

2998 G. B. Sharman, "Reproductive physiology of Marsupials," *Science* 167 (1970): 1221-1228. Hartman, *Opossums*, 84, 118.

2999 William Bullock, *A Companion to Mr. Bullock's London Museum and Pantherion*, ed. 12 (London, 1812), 28-29.

3000 Wilfrid Blunt, *The Ark in the Park: The Zoo in the Nineteenth Century* (London, 1976): 67.

3001 Ethan Allen Andrews, "Zoological Gardens," *Sci. Monthly* July (1941): 5-21, 116-132 with a chronology of zoos.

Although George Ord had opossums swinging through the trees using their prehensile tails like monkeys, he observed that they counterfeited death by turning onto their backs.[3002] John Davidson Godman, however, denied this and remarked:

> *In Dr. Barton's facts and conjectures on the opossum, he mentions as a circumstance worthy of curiosity, the faculty the opossum has of lying on its back. We have observed this action of the animal, but could see nothing in it very different from what is very frequently done by the dog, cat, marmot, squirrel, and various other animals, which occasionally place themselves sufficiently on the back to expose the inferior surface of the body fully; but that this action in the opossum is indicative of any peculiarity, or is the ordinary position chosen by the animal, is what we cannot state from our own observation.*[3003]

"The mystery of the development, birth, and marsupial gestation of the opossum challenged the imagination and evaded solution for four centuries." Carl Hartman in his delightful scholarly monograph, *Opossums* elaborates on the sixty-seven days of development from birth when it is "a veritable embryo and yet it is a breathing, digesting, reacting entity."[3004]

The Badger

Included in his note to Pennant (Sterling, *Barton's Notes*, 44) is "the skull is said to be very hard, the animals bearing violent blows on the head, without sustaining any sensible injury." Was Barton's drawing of the badger[3005] (Figure 67) made on his trip into Ohio in 1785?

The Porcupine

"I think I mentioned also once to you that the Indians call the Birch Tree, the mother of the Porcupine, since (they say) the Dam cannot give them suck, they are raised by the Sap of this tree." So wrote Heckewelder 2 Feb. 1796. Number 63 in Sterling, *Barton's Notes*, is absent. The North American Porcupine is *Erethizon dorsatum*, first recognized by Linnaeus, 1758.

The Bat

By 1793 Barton had known only one bat to report to Pennant. Sterling, *Barton's Notes*, no. 27, suggests it was the Hoary bat, *Lasiurus cinereus* Beauvois. Was this William Bartram's unlabelled, undated drawing (Figure 73), which he called the "Leather-wing Bat"? Thomas Say writing of his *Vespertilio pruinosus*[3006] said, "The late professor Barton presented a specimen of this bat to the Philadelphia Museum, that had been captured in Philadelphia,"[3007] Barton here may have been writing on *Eptesicus fuscus*, the big brown bat. Palisot de Beauvois had

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3002 George Ord in William Guthrie, *A New Geographical, Historical, and Commercial Grammar; and Present State of the Several Kingdoms of the World* (Philadelphia, 1815, 2 vols.), 301.

3003 John D. Godman, *American Natural History*, ed. 3 (Philadelphia, 1860) 1: 264.

3004 For a digest of habits, folklore, etc. of the Virginia opossum see George H. Lowery, Jr., *Mammals of Louisiana and Its Adjacent Waters* (Baton Rouge, 1974), 55–56.

3005 [*Taxidea taxus* Schreber, 1777, the American Badger as distinguished from Linnaeus' Eurasian Badger, *Meles meles*, described in 1758. MSW.]

3006 [A synonym for *Lasiurus cinereus* Beauvois, 1796, the Hoary Bat. MSW.]

3007 In Edwin James (1797–1861), *Account of an Expedition from Pittsburgh to the Rocky Mountains...under the Command of Major Stephen H. Long* (Philadelphia, 1823), 153, note 139. This appears in Thwaites, *Travels* 14 (1905): 250.

described three bats in 1796: *Vespertilio* [*Eptesicus*] *fuscus, V.* [*Lasiurus*] *cinereus,* hoary bat, and *V. rubellus,*[3008] red bat. G. S. Miller, Jr., taxonomist of Chiroptera, did not review the early history of the subject.[3009]

The Jumping Mouse

> *An animal of the Jerboa-kind was discovered about a year ago, at the distance of about ten miles from Quebec, and six from the falls of Montmorenci. The gentleman from whom I received this information says he understood that the animal was about as large again as the common striated squirrel (S. striatus)* [an error, *Tamias striatus*]. *My informant did not see the animal, but he has entire confidence in his authority. I could learn nothing concerning the colour food, &c. of this Canadian Jerboa.*[3010]

Barton's jumping mouse is the New World counterpart of the Old World jerboas. His "American Jerboa," which Barton called *Dipus,* now known as *Zapus hudsonius,* is a small jumping mouse, with large hind feet and a long naked tail. It frequents stream banks in lush vegetation, foraging at night or on cloudy days, and hibernating through the cold months. Barton gathered notes on his *Dipus* for Pennant's revised edition of *Arctic Zoology,* reporting to Thunberg in 1796 that his "account of this little animal which I call Dipus Americanus" was in press. (He issued a supplementary note in 1809.) Then Barton told how beginning in August 1796 he kept a *Dipus* for "near four months" in a glass jar feeding it bread, *Zea mays* (corn), "Black alder," or winterberry (*Ilex verticillata*). In November his *Dipus* passed into a torpid state from which he roused it on occasion or it woke to feed, then returned to sleep. Its respiration was slow. In December, however, though the weather was colder, it was active until he put it near some ice. Unfortunately he roused it from a torpid condition with too much heat, and it died. Barton said the little animal is called "seven-sleepers" by gardeners, who find that they sleep at the bottom of roots such as horseradish, and he wondered whether they are able to judge their safety from frost by root length. He proposed a second species, *Dipus mellivorus,* which he said sometimes scooped out the wax from hives and made nests of grass, down from feathers, and old rags. They eat the honey and wax fat on it. Torpidity, he concludes, is an accidental circumstance, not necessarily a specific character for animals—some individuals sleep while others are active.[3011]

Peale acquired a specimen for his Museum, and Barton prepared a description in about 1793:

> *Dipus*
>
> *The following description of this animal is taken from the Peale's Museum.—*
>
> *Two fore teeth in each jaw. In the drawing made by the French gentleman the colour of the belly is not sufficiently of a cream colour, and the yellow streak next to the colour of the belly is too abrupt, that is, it does not blend gradually enough with the belly colour.—*
>
> *The whole underside of the body, beginning with the upper jaw, and ending at the anus, is of a cream colour, as are also the insides of the fore-legs, and the insides of the hind-legs. The yellow streak begins near the lower part of the nostril, on each side, runs along the whole length of the*

3008 [Described earlier as *Lasiurus borealis* Müller, 1776, Red Bat. MSW.]

3009 *North American Fauna* 13 (1897); and *Bull. U.S. Natl. Mus.* 57 (1907).

3010 Sterling, *Barton's Notes,* 18–19, n. 32. [*Sciurus striatus* Pallas, 1778, referred to the Siberian Chipmunk, *Tamias sibiricus.* Linnaeus named the Eastern Chipmunk *Tamius striatus,* 1758. MSW.]

3011 *Trans. Amer. Philos. Soc.* 6 (1809): 143–144.

head and neck, the upper and under side (or edge) of the fore legs, from thence all way along the body, terminating with the thighs at the joint. The tail, its whole length is finely ciliated, or lightly covered with hairs: the whole under side of the tail is of a yellowish cream-colour. The fore-feet are furnished with 4 fingers, besides a kind of minute tuberculum, in place of a thumb, which tuberculum is without a nail: the nails of the other fingers are long and sharp. The hind-feet are furnished with 5 toes, very well represented in the drawing, the three middle toes being long, and slender, and very nearly of an equal length; the two side ones are much shorter: all the 5 are furnished with sharp nails.—The inner toe of the hind foot is the shortest of the whole five.

It does not appear, from this specimen, that the upper lip is bifid, as it is in Dipus Hudsonius & D. longipes.[3012]*—The whiskers are very long.—In the drawing, that part of the thighs which is immediately above the joint is represented too thick and stout.—*

The nostrils are very distinct in the nose of this little animal. The back or upper part of the body, is of a darker brown than the sides, or the parts between the back and the yellow streak, I think, the brown colour of the body may be said to resemble that of our wild-rabbit.[3013] *N.B. This description has been made with a good deal of care. B.S.B.*[3014]

In a letter to Belknap in November of 1794 Barton referred to his animals as *Dipus hudsonius* Zimmermann, but was considering a specific name "*piningus*," the Delaware Indian name.[3015] He sent off a copy of his description and drawings to Peck with whom at the time he was carrying on an active correspondence, and Peck replied from Boston 8 October 1794:

I thank You for your description of your little Dipus. I suspect it differs a little from that I mentioned to our Friend Dr Belknap. Give me leave here to mention an ommission in Your description. The Colour of the abdomen is not mentioned. A Gentleman of York, which is the next town to Kittery, was kind enough to ride over, on purpose to bring me a pair of them. I was so unfortunate as to lose them both, but had them long enough to observe their manners. I kept them in a cage & furnished them with grass of which they formed a nest. In this they concealed themselves, seldom making their appearance, but early in the morning or at evening, except when they wanted to drink. Sometimes they were not out for a day or two. One died soon after I received them & so soon became putrid that I could not handle or dissect it. Of this I have a fine skeleton, prepared by the [larder beetle] *Dermestes lardarius. The other lived over the winter & died in the spring, in concealment, so that it had been dead 2 or 3 days before I suspected it, & by its being extremely offensive I was prevented as before from examining particularly & by some accident I omitted taking its weight.*

It is a very active little animal, not at all vicious & very gentle in its manners. In constructing its nest, it gathers a portion of grass under it with its fore-feet & thrusts it behind with its hindfeet, so that it works backwards.

3012 [The epithet "longipes" synonymizes today to both *Dipodomys ordii*, Ord's Kangaroo Rat, and *Onychomys leucogaster*, the Northern Grasshopper Mouse. MSW.]

3013 [Barton's wild-rabbit was likely the Eastern Cottontail, *Sylvilagus floridanus*. MSW.]

3014 Barton papers, APS. The French gentleman was Palisot de Beauvois.

3015 [Barton's jumping mouse was *Zapus hudsonius* as described by Zimmerman in 1780. MSW.]

When it has thus piled it up sufficiently, it takes a mouthful of short pieces & forcing itself under the pile bestows its little charge on the inside & thus till all is finished.

This business was often repeated, sometimes every other day, sometimes every three days & its industry, earnestness & bustle afforded me a very pleasing spectacle.

It always kept a stock of food in its nest. I fed it with Chestnuts or Mays [Maize]*: it preferred the former. It drinks by lapping. It lives in meadows and wet ground, but is not I think aquatic. I received it by the name of leaping mouse.*

The manners of animals are interesting & worthy of attention; for this reason I have been so particular. Forgive me if I tire You. I am sorry that I can send You only a Sketch of this animal. It will, however, give You an Idea of its Size, which varied very little from the enclosed figures, & of its feeding attitude. I shall preserve the next specimens I can procure & will describe it particularly. The upper part of mine was nearly of the rat-colour; the broad stripe of the side of a pale rust colour mixt with a few hairs of the colour of the back; the under part from the throat to the anus of a snowy white. The tail more than twice the length of the body, somewhat hairy; but no evident pencil that I remember at its apex. The fore feet, or as You stile them arms very short, not used in walking, tetradactylous with a rudiment of the Pollux. Hind feet rather shorter than the Body, but longer than the Body if the thighs are included. It moves leaping and leaps with considerable force. I should be much gratified to see a drawing of Your Dipus. The sketch enclosed is copy of one I took while mine was living. It appeared to me to differ from the mus longipes Linnei but I have not the Syst. Nat. with me. I have understood that Pallas had discovered many animals of the murine genus.[3016]

Since Barton had loaned Peck his copy of Gmelin, *Caroli a Linne Systema Naturae*, ed. 13 (Leipzig, 1788–1793), he asked Peck to check whether his Dipus was accounted for in Gmelin.[3017] Peck replied that he had "looked thro' the characters under the Genus Dipus but [did] not find mine among them...I have not as yet been able to procure another of these amusing little creatures; but hope I shall be able to, the ensuing summer & shall take care to secure as many of its traits as possible."[3018] This interest in Linnaeus's works is an instance of the limitations American naturalists faced when seeking essential information for comparing possibly related or distinct Euro-American species. Barton inquired of John Heckewelder 29 August 1796:

P.S. Do you know anything concerning a little animal, which the Mohiguns call Wank-peh-sous? It is of a ground squirrel colour; the hind legs are remarkable long, when compared to the forelegs, and it moves by jumping. I have at different times, received some information concerning this animal. In its general shape, it is made like a mouse.[3019]

In writing to Thunberg 5 September in a postscript Barton mentioned:

3016 Barton papers, APS.

3017 Barton; 27 January 1796, to Peck. Gmelin's edition of *Systema Naturae* is not in Barton's surviving library, but a copy was presented to the APS by Robert Patterson, who purchased some of Barton's books after his death.

3018 Peck, 12 March 1796, to Barton; Barton papers, APS.

3019 Gilbert papers, CPSP.

> *I have also discovered a new species of Dipus, or Jerboa, which I call Dipus Americanus.*[3020] *An account of this little animal is printed off for the 4th vol. of the Transactions of our Philosophical Society, now in press. It is certain that many of the quadrupeds of our country have not yet been described. I have also discovered a new species of Sorex.*[3021]

On 14 February 1803 William Bartram sent a specimen of the jumping mouse. He thought the bright color of the coat indicated that animal juices circulate in the hair.[3022] Answering another request, Bartram wrote from Kingsess 18 February 1804:

> *My esteemed Friend, Health and many Friends &c.*
> *According to your desire, I have obtained my Brother's observations on the manner of Jumping Mice: He says that, when they are routed, the Females having Young with them, carry them off the whole litter at the same time, fastened by their mouths to their Teats 6, 7, in number. He says they are Dormant or sleepers: That in the Winter time he has frequently found them among rocks & rubbage, & in the hollow trunks & Limbs of Trees. & that soon after lying in the warm sun, sheltered from cold, revise & even regain strength & activity enough to make their escape. I hope Your family are in Health, my Frd. I think it long since You have been with us. I am as ever have been Yours Tr. Will Bartram.*[3023]

In his published *Letter to Lacépède*, Barton refers to his article in "the 4th vol. of the *Transactions*":

> *I have given account of a new species of Dipus or jerboa, which I call Dipus Americanus. I have discovered some other species of this genus, particularly one, which I call Dipus mellivorus. It is very destructive to our bee-hives, eating the honey: hence the specific name.*[3024]

In the *Transactions* Barton had named his *Dipus, Meriones americanus*, now *Zapus hudsonius*.

Other Mice

> *There are a kind of Mice in the Western Country of a larger size than our common House Mice, & with a short Tail, about an Inch long, which run about with their Young, Naked & blind sticking to their Titts. I have caught them, & placed them in a Barn wherein I put Hay, Deer Hair &c. for a Nest, & have fed them regularly for Days together, & never could observe one of them at liberty from the Tit, untill they became of a good Size.*

So Heckewelder wrote Barton 2 February 1796.[3025]

In 1805 Barton also put into print for his American readers his account of what he called the North American Wandering Mouse, suggesting that any further information would be

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3020 [*Zapus hudsonius* Zimmerman, 1780. MSW.]
3021 Barton papers, APS; his copy.
3022 Barton papers, APS.
3023 Barton papers, APS.
3024 *Philos. Mag.* 22 (1805): 99.
3025 Barton papers, APS.

acceptable. He told how in 1796 at Burlington Bay at the west end of Lake Ontario, and at Long Point on the north side of Lake Erie, "they came out of the woods, from northward, in troops of thousands, and committed great havoc among the Indian corn." Cats ate their fill, then ignored or just played with them. They died in corn cribs, which become offensive in smell. The animal was smaller than a house mouse, of the same color with a white belly, long tail. It was never reported again. Barton thought the species new or unnoticed by naturalists. He then lists other species of Asiatic murine animals, *Mus agrarius, Mus oeconomus, Mus Lemmus, Mus Lagurus, Mus socialis,*[3026] etc. distinguishing this mouse from them.[3027]

The Beaver

The beaver[3028] was a minor subject for Barton, but once more he recalled appreciatively: "My very respectable and learned friend Dr. John Walker, Professor of Natural History in the University of Edinburgh, used to inform his class about them." This example of Walker's lectures on the habits, potential uses, and philosophic reflection of the beaver suggests how Barton's prose may have been influenced by his professor:

> *Broad Tailed Cat. It is an harmless animal, not carnivorous nor even piscivorous, but lives entirely on the barks of trees, and particularly aquatic trees, and no doubt the Beaver might be translated to the north of Scotland and settled on many estates with advantage. It is a common article of diet. Its tail is of great delicacy, and used as such in North America. A colony of beavers one would wish to see if it were only to gratify an intelligent philosophic mind, for they appear more like an Academy or Colony of Engineers, then a parcel of inferior brutes.*[3029]

Barton had written to Thomas Pennant in 1793:

> [The beaver] *avoids the neigborhood of man...not that the Beaver is unsocial, but because Man is his enemy. I have sometimes been as extravagant as to wish the laws of my country were extended in their influence to the protection of this sagacious quadruped.*[3030]

When on September 19, 1806, Barton presented Heckewelder's paper on the beaver to the American Philosophical Society, Barton reported that he would prepare the notes to accompany the paper for publication.[3031]

The Pocket Gopher

William Bartram had described the "ground rat or Pocket Gopher" in his *Travels*, 7. He had encountered "a large Ground-rat, more than twice the size of the common Norway rat [*Rattus norvegicus*]" on Colonel's Island near Sunbury in present Liberty County, Georgia. "In the nighttime," he wrote, "it throws out the earth, forming little mounds, or hillocks."

3026 [These rodent names today refer to *Apodemus agrarius*, the Striped Field Mouse as described by Pallas, 1771; the Tundra Vole *Microtus oeconomus*, also by Pallas, 1776; the Norway Lemming, noted as *Lemmus lemmus* by Linnaeus, 1758; the Steppe Lemming *Lagurus lagurus* Pallas, 1773; the Eurasian Social Vole, *Microtus socialis* Pallas, 1773. MSW.]

3027 *PMPJ* 1 (1805) Pt. 2: 31–32.

3028 [Later described as *Castor canadensis* by Kuhl in 1820. MSW.]

3029 Lecture notes probably taken by Thomas Johnson, dated 3 May 1790. Vol. 5 F. 121, UELA.

3030 Sterling, *Barton's Notes*, 1.

3031 APS, "Minutes," 388. John Heckewelder, "Facts and observations relative to the beaver of North America," *Trans. Amer. Philos. Soc.* 6 (1809): 209.

Mitchill had received a specimen from Josiah Meigs, president of the University of Georgia, in July 1801 with a letter reporting that "for the space of about a hundred miles, between Savannah and Augusta, the land of each side of the road is almost covered by the large heaps of loose earth raised by it." Mitchill then published on "the undescribed little quadruped of Georgia" in *Medical Repository* in 1802,[3032] providing also a description mentioning its "sacks or wallets, where it deposits its foods, and each will contain as much as can be put in a large tablespoon" born "on both sides of the jaw, externally," this information provided by John Milledge, future governor of Georgia.[3033]

This may have been a challenge to Barton, who went to his library shelf and found that Hernández in *Historia Animalium*[3034] had mentioned a Mexican mole by the name "Tucan seu Talpa indica," and "Tuza or Tuca" a kind of mole of the Indies.[3035] Clavigero, *History of Mexico*, 2: 321, rendered the name "tozan." He described it as a "Quadruped of the mole kind but larger and more beautiful."

Immediately upon reading Mitchill's account, Barton sent out letters to possible informants. To Mr. James Houston, evidently in Georgia, he wrote 27 January 1803 that he had "long been very anxious to obtain some information concerning the animal which, I am assured, is not uncommon in your vicinity. It is a species of rat." He then referred to it as "the wood rat, remarkable for building a singular habitation of small pieces of wood." Was he here confusing the Eastern Woodrat, *Neotoma floridana*, with the Southeastern Pocket Gopher, *Geomys pinetis*? Events seem to relate his inclination toward the pocket gopher. Barton requested a "well prepared specimen...Possibly the animal might be sent alive to me in Philadelphia. In this case, be so good as to advise me of the vessel, by mail. Anything else, illustrative of the natural history of our animals, or plants, or minerals, will oblige."[3036]

Meriwether Lewis in his journal for 9 April 1805 described the mounds of the Dakota pocket gopher seen above Fort Mandan as "little hillocks" appearing as "ten or twelve pounds of loose earth poured out of a vessel on the surface of the plain." At that time he mentioned it as reminding him of the "salamander common to the sand hills of South Carolina and Georgia."[3037] After a visit from Lewis, Barton noted that "May 4, 1807. Capt. M. Lewis told me that he saw in very remote parts of his journey appearances exactly similar to those which are known to be produced by the Mus tuza in Georgia; & he says that similar appearances are observed at St. Louis near the mouth of the Missouri."[3038] Custis wrote in 1806 of "A species of Mus which I believe is the same with that which is called in Georgia Salamander a description of which Dr. Barton has before this favored the world with: lest, however this may be somewhat different from that I will describe it," and he described the similar plains pocket gopher,[3039] now known as *Geomys bursarius* Shaw.[3040]

Barton's "Mus Tuza" was announced in "Miscellaneous Facts & Observations," in *Philadelphia Medical and Physical Journal*, Suppl. 1. 1806, and a description appeared in J. H. Voigt, editor, *Magazin für den neuesten Zustand der Natur-Kunde* that same year. It was cited in Hall and Kelson, *The Mammals of North America* (New York, 1959, 2 vols.) 1: 448.

3032 *Med. Repos. 5* (1802): 89.

3033 [Its occurrence in Georgia suggests *Geomys pinetis* Raf., 1817, the Southeastern Pocket Gopher.]

3034 Francisco Hernández (1514-1578), *Nova Plantarum, Animalium et Mineralium Mexicanorum Historia...* (Rome, 1651).

3035 [The Mexican Tuza recognized now as *Zygogeomys trichopus* Merriam, 1895. MSW.]

3036 Carson papers 3: 21, CPSP. [Barton was credited with the name *Mus tuza* (1806), now a synonym for the Southeastern Pocket Gopher, *Geomys pinetis* Raf.]

3037 Reuben Gold Thwaites, editor, *Original Journals of the Lewis and Clark Expedition, 1804-1806* (New York, 1904-1905, 7 vols. and maps; reprinted, New York, 1969), Vol. 1 (1904): 289; Cutright, *Lewis and Clark*, 130, identifies the Georgia rodent as *Geomys pinetis*; the mounds of the Mandan animal were made by a subspecies of the Northern Pocket Gopher *Thomomys talpoides* Richardson, 1828. MSW.

3038 Barton, miscellaneous papers, zoological notes no. 4, APS.

3039 [*Geomys bursarius* Shaw, 1800, Plains Pocket Gopher. MSW.]

3040 Flores, *Custis*, 231, fn. 94.

Barton noticed that there was a larger, undescribed form west of the Mississippi, perhaps alluding to *Geomys bursarius* described by Shaw in 1800. More about that later.

After a visit to Philadelphia by the South Carolina botanist, Stephen Elliott, Barton noted "Tuza. Sept. 3d 1808. Mr. Elliot says 'Mus tuza has not been seen at all in S.C.' He saw a specimen 'in [Peale's] Museum [with a] Note on animal belonging to Mr. Enselen.'[3041] Favorite food is common potato; invades potato field adjacent to its habitat; also called 'Salamander' because it resists fires where the fields are burned each season."[3042]

About the pocket gopher, Mr. C. W. Lewis of "Sweet Springs, Virginia," now in Monroe County, West Virginia, wrote 14 July 1809:

> *Did you ever receive the skin of the singular rat, I mention'd to You?— I had a number of them caught at different times to send on alive to you, but was disappointed by the waggons—From failure of this mode of forwarding them, I was induced to stuff one of the skins, & put it into the hand of a merchant in Staunton who assured me he would deliver it in person—I also gave him with it the little animal's history as related to me by a very intelligent old man who works constantly in a cave on Jackson's river where they abound.*[3043]

Vincente de Cervantes of Mexico City evidently sent Barton a specimen of "Tusa" under that name.[3044] Barton noted that the "general appearance of this little animal is not unlike that of a mole or Shrew," and proposed that the rodent be named *Tusa hernandesii*. An unfinished three-page manuscript with the title "Some account of the Mexican animal called Tozan or Tuza by Professor Barton of Philadelphia," intended for the Linnean Society of London rests among Barton's papers.[3045]

It was not long after Barton had published his notes on *Tuza* in his *Philadelphia Medical and Physical Journal* Suppl. 1 (1806) that he wrote to Lacépède 31 October that year:

> *There has lately been discovered a species of mus, somewhat larger than the common house-mouse, which has some of the singular habits of the opossum tribe. This animal is a native of Virginia and other parts of the United States. You have seen Dr. Shaw's account of the mus bursarius, or Canada rat.*[3046] *Either this species...or another very nearly allied to it, is common in the state of Georgia and other southern parts of the United States. In Georgia it is known by the ridiculous name of salamander. I take it to be the tozan or tuza of Clavigero.*

"Dr. Shaw's account of the mus bursarius," the various reports coming from his correspondents, the hoped-for response of Lacépède, all were fillips for Barton's plan to publish his views on the classification of the "ash-coloured rat" and its relatives. Was the drawing by T. Davis reproduced here (Figure 66) intended for his paper? On 13 December 1802 William Bartram had written to Barton:

3041 Aloysius Enslen visited Savannah at intervals from 1804–1806, met Stephen Elliott and John Brickell. Alexander Wilson said he also collected birds. Ewan, "Lyon," 10; Ewan, *Pursh Flora*, 15.

3042 Barton, miscellaneous papers, zoological notes no. 4, undated, APS.

3043 Barton papers, APS.

3044 No Cervantes letter regarding "Tusa" has been found. [Barton's 1806 name *Mus tuza* is a synonym of uncertain application within *Geomys pinetis*, the Southeastern Pocket Gopher. MSW.]

3045 Barton, miscellaneous papers, zoological notes no. 4, undated, APS.

3046 George Shaw, *Trans. Linn. Soc. London* 5 (1800): 227–228. Pl. 8.

> *The painting of the Northern Rat*[3047] *is exceedingly curious. The size & form agrees pretty well with the Floridian Earth Ratt. But the Bucca[e] or Cheeks appear out of all proportion. I wish you could get a good Specimen of the Real Animal. The foremost claws of the Forefeet much resemble the Floridian species,*[3048] *tho I think those of the latter are proportionately large. May God keep you in Health My Friend...P.S. I invite you to come as soon as convenient.*[3049]

Four days later Barton exhibited the drawing of a "new rat with cheek-pouches from the Indian countries of the Northwest, killed in 1798" at a meeting of the American Philosophical Society.[3050] It is noteworthy that the watercolor has the same style border and script featured in the Ohiopyle Falls drawing of Barton.[3051]

The drawing illustrating Shaw's account in the Linnaean Society's Transactions indicated "T. Davies, del. 1799." Lieut.-General Thomas Davies, of the Royal Regiment Artillery, then aged sixty, was a competent artist—126 "delineations" of birds and four watercolors are preserved in Lord Derby's collection at Knowsley Hall.[3052] It is from an associate of Davies that we learn of the source of the animal. Col. George T. Landmann of the Corps of Royal Engineers published his recollections, telling of his garrison duties at St. Joseph Island at the entrance to the straits between Lakes Huron and Superior during the summer of 1798:

> *Mr. Mason, a naturalist arrived...about sixty years of age or perhaps more, very kind in his manners, very plain and unassuming; and I thought him very scientific...He showed me a species of rat or an animal greatly resembling one, which he had very recently procured, and which had a large pouch or bag on each side of the lower jaw about the size of a pigeon's egg, and pending almost as low as the ground. This bag was a mere membrane, exceedingly thin. Mr. Mason told me that it was an animal hitherto unknown and that he should send it to the British Museum, naming it after himself, Masonia (N).*[3053]

"Mr. Mason" was Francis Masson (1741–1805), native of Aberdeen, the first plant collector sent out by Kew. After his successful botanizing in South Africa, he arrived in New York late in 1797, reached Niagara Falls by July 1798, proceeded to Fort Erie as "new plants...sprung up under his steps."[3054] One of these was *Trillium grandiflorum*, the Snow Trillium or Wake Robin, sent to England before Michaux published its description in his *Flora* in 1803. Pursh referred to Masson's collections twenty-one times in his *Flora*. It is not clear whether Barton's "ash-coloured rat" taken "by some Indian hunters in the upper parts of interior Canada and sent down to Quebec" was alive when Shaw described it, or whether as

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3047 Figure 66. The Northern Pocket Gopher, *Geomys bursarius*. From Audubon & Bachman: *Quadrupeds*, 1: 338, "The first naturalist who gave a specific name to the Pouched Rat was Dr. Shaw [1800]...accompanied by a figure represented as having only three toes. The drawing had been made by Major Davies. Subsequently (in 1801) he again described and figured it in his *General Zoology*, vol. ii, p. 100, pl. 138. The pouches in both cases are inverted, and hanging down like long sacks on each side. These would be very inconvenient, as the animal could not place its nose on the earth or fill its sacks, with such an unnatural appendage dangling from its mouth. The error seems to have originated from the whim or ignorance of an Indian."

3048 Southeastern Pocket Gopher, or *Geomys pinetis*, based on Barton's description.

3049 Barton papers, APS.

3050 APS, "Minutes," p. 330, for 17 Dec. 1802.

3051 See Figure 13.

3052 F. C. Sawyer, *J. Soc. Bibliogr. Nat. Hist.* 2 (1949): 175. K. M. Fenwicks & C. P. Stacey, "Thomas Davies, Soldier and Painter of Eighteenth Century Canada" *Canad. Art* (Spring, 1956); Groce & Wallace, *Artists*, 167.

3053 G. T. Landmann, *Adventures and Recollections* (London, 1852) 1: 315.

3054 James Britten, "Francis Masson," *J. Bot.* 22 (1884): 114–123.

reported by Barton to the Society it was "killed in 1798." Shaw's text states that "it is now in the possession of Governor Prescot,"[3055] who presumably took the animal on a visit to London, which suggests the animal may still have been alive.

Not until 1815 did *Mus tuza* appear in William Guthrie, *A New Geographical, Historical, and Commercial Grammar; and Present State of the Several Kingdoms of the World* (Philadelphia, 1815, 2 vols.), 292, based on Mitchill's article of 1802 on the Georgia rodent. In 1817 Rafinesque created the genus *Geomys* for the Pocket gopher, his type *Geomys pinetis* encompassing Barton's "Mus tuza." Clinton Hart Merriam took up the name *Geomys tuza* for the Pocket gopher.[3056] In his monograph on Geomydiae, unaware of Barton's recognition of *Mus tuza*, Merriam designated Meigs's specimen of 1801 as the type of the species. The Mexican mammal which had carried the folk-name "tuza" was classified by Merriam on skull characters from separate genera.

In 1981 E. Raymond Hall indicated the type locality of the Plains Pocket Gopher[3057] as Elk River, Sherburne County, Minnesota.[3058] This intricate rodent history, matching the tunnels it constructs through American plains, involves as many as twenty different binomials and nine vernacular names. These may be traced in the galleried bibliography gophered through the literature by the inimitable naturalist-author Elliott Coues in his massive "Monograph of North American Rodentia."[3059]

The Fox Squirrel

Besides the pocket gopher, which Peter Custis encountered on the Red River Expedition of 1806, a more visible "first" mammal he named in his journal, "Sciurus ludovicianus," is now known as a subspecies of the fox squirrel, *Sciurus niger*.[3060] To his observant eye this squirrel appeared different from the animals he had seen in Virginia. The fact that Custis reported only Fox squirrels, these foraging mammals, tells us something of the forest ecology in the Red River country in 1806. Hunting, stock-raising, and cotton growing had reduced other quadrupeds.[3061] Barton's interest in squirrels had been sharpened earlier by Thomas Pennant and his revision (not completed) of *Arctic Zoology*, for which it had been planned Barton was to contribute Atlantic coast fauna.

For further notes Barton had turned to his artist-friend on the Schuylkill. Among other requests he wrote Bartram 30 December 1792 "By this conveyance, you will receive the Black-Squirrel. I could not get a live one, or a recently dead one. This is the property of Mr. Peale, who kindly lent it to me. I shall not pretend to give you any directions about the drawing." Certainly it had been this drawing of the black squirrel, now lost, which Barton sent to Pennant in 1793.[3062] The fox squirrel pelage varies from the black of Catesby's drawing to shades of gray and brown. In a postscript, after wishing Bartram could come to Philadelphia to meet some Indians from the Wabash, Barton insisted, "Any observations you may occasionally make regarding the natural history of our country will be acceptable to me." He added that he "aimed at an extensive work on the natural history of the

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3055 Robert Prescott (1725–1816). *Dict. Canad. Biogr.* (London, 1963).

3056 *N. Amer. Fauna* 8 (1895): 113.

3057 [*Geomys bursarius* Shaw, 1800. MSW.]

3058 E. Raymond Hall, *The Mammals of North America*, ed. 2 (New York, 1981), 499.

3059 E. Coues & J. A. Allen, *U.S. Geogr. Geol. Surv. Territ.* 11 (1877): 612.

3060 Custis's squirrel represents a lighter color phase of the Eastern Fox Squirrel, originally named *Sciurus niger* by Linnaeus, *Systema Naturae*, ed. 10, 64. The Linnaean name was based solely on Catesby's plate, 2: 73, mentioned by Barton in his notes for Pennant. Richard Harlan (1796–1843), *Fauna americana, being a description of the mammiferous animals of North America* (Philadelphia, 1825), 186, lists *Sciurus ludovicianus* Custis, and Barton's *PMPJ* 2 (1806) Pt. 2: 47.

3061 Flores, "Ecology," 16.

3062 Sterling, *Barton's Notes*, 50, no. 96.

United States."[3063] One to oblige was George Cheyne Shattuck, who wrote Barton from Boston 28 August 1807 that he had observed the "Red Squirrel"[3064] on the summit of the White-Hills of New Hampshire. This Barton thought was "probably the Sciurus striatus, which we call the Ground-squirrel, or perhaps the small Squirrel known in many parts of the United States by the name of 'Pine Squirrel.' To this species which is not described in any systematic work, I have given the name of Sciurus Pinetingus," again his interest in Indian names.[3065]

The Prairie Dog

Just as the Osage orange (which was not scientifically described as *Maclura pomifera* until early in the nineteenth century), the prairie dog, finally named *Arctomys ludovicianus* by George Ord in 1815,[3066] must have been commonplace to the voyageurs in the Missouri River country decades before its "discovery" by Lewis and Clark. They stumbled into the burrows at Tower, in present Boyd County, Nebraska, on 7 September 1804.[3067] The first specimen of the "Marmotte," or "Louisiana Badger" was cooked for the Captains' dinner!

The cooking pot fate of potential "type specimens" merits comment: William Bartram consumed the type of the Florida Sandhill Crane,[3068] and so the taxonomist must rely on the very satisfactory drawing.[3069] Later, John Kirk Townsend, who accompanied Barton's protégé "across the Rocky Mountains" returned from his stroll one evening only to be "surprised to find Mr. N. and Capt. T. picking the last bones of a bird which they had cooked. Upon inquiry, I ascertained that the subject was an unfortunate owl which I had killed in the morning, and had intended to preserve as a specimen. The temptation was too great to be resisted by the hungry Captain and naturalist, and the bird of wisdom lost the immortality which he might otherwise have acquired."[3070]

Six years before Lewis and Clark saw the "Marmotte," George Turner, a judge of the "Northwest Territory," a member of the American Philosophical Society since 1790, contributed a paper to the Society "on a nondescript animal called the Prairie squirrel."[3071] The paper was referred to Dr. Barton who reported that "the Society hopes for a more accurate description hereafter," and the paper was not published. From 1794 Judge Turner had presented a variety of curiosities to the Society's cabinet; for example, Indian artifacts, fossil coal, a sea-otter[3072] skin from the Pacific Coast, the foot of an American swan;[3073] and we suggest that a passing fur trader in Cincinnati had presented Turner with a drawing, description, or a skin of the "Burrowing [squirrel]." "All the late American travellers give some description of an animal...about a third larger than the largest [squirrel]."[3074] The Plains Indian knew the animal as "Wishtonwish."

Credit for the first publicity of the prairie dog has been given to Lewis and Clark following Barton's short report of 1805 of their discovery of "a species of Arctomys, or marmot,

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3063 Bartram papers, vol. 1, p. 8, HSP.

3064 [The Red Squirrel *Tamiasciurus hudsonicus* Erxleben, 1777; the Eastern Chipmunk, *Tamias striatus* L., 1758. MSW.]

3065 *PMPJ* 3 (1807) Pt. I: 26–35. [*Sciurus striatus* Pallas, 1778, refers today to *Tamias illiger*, 1811, to the Siberian Chipmunk *T. sibiricus* Laxmann, 1769. MSW.]

3066 [*Arctomys* refers in part to *Cynomys*, with *Arctomys ludovicianus* Ord, 1815, now in *Cynomys*. MSW.]

3067 Cutright, *Lewis and Clark*, 79.

3068 [*Grus canadensis* L., 1758. AOU.]

3069 Ewan, *Bartram*, 66.

3070 John Kirk Townsend (1809–1851), *Narrative of a Journey across the Rocky Mountains* (Philadelphia & Boston, 1839), 152. "Mr. N[uttall] and Capt. T[hing]," Capt. N. Wyeth's assistant and a band of missionaries, reached Fort Vancouver 16 Sept. 1834. Witmer Stone provides commentary, *Condor* 18 (1916): 8–9.

3071 APS "Minutes," 272, for 15 June 1798.

3072 [Described as *Mustela lutris* by Linnaeus in 1758, the sea otter is now *Enhydra lutris*. MSW.]

3073 APS "Minutes," 218 and 221, 30 May 1794; Bell, "Cabinet," 9–11.

3074 Warden, *Account* 1: 225–228.

perhaps the Earless Marmot of Pennant; or Arctomys Citellus of Pallas."[3075] Then Barton adds that the animal "was formerly known to be a native of the continent of north america," referring to the report, but not mentioning Judge Turner. Early in 1800 after his appointment as a curator with Barton and Peale, Turner had misappropriated funds and was expelled from the Society.[3076]

What must have been the first live "Louisiana Marmotte" seen in Philadelphia was sent to Peale by President Jefferson, along with skins and skeletons brought back by Lewis and Clark. "A little prairie dog...alive and good-natured, but sleepy as winter approached," was acknowledged. Titian Peale later made a watercolor of the "burrowing dog of the prairies," also called the "Barking squirrel."[3077] From the Lewis and Clark era a vast literature grew through the century, mostly folk tales about prairie dogs, burrowing owls and rattlesnakes living together in the same burrows.[3078]

After the death of Lewis, the Expedition's discoveries were named and renamed. As Donald Jackson remarks, "sending back specimens and general descriptions of a new species was one thing; describing it formally in a scientific publication was quite another."[3079] So it was with the Prairie dog. George Ord, devoted friend of Alexander Wilson, summarized the zoological information of the Expedition a decade after the return of the explorers. He included the prairie dog in the group of previously known animals, and following Barton's lead, in 1815 Ord named his Louisiana marmot *Arctomys ludovicianus.*[3080]

It was not long, however, before Rafinesque distinguished the American "marmotte" from the Old World "earless marmot." With an uncanny perception and unmitigated boldness, Rafinesque ransacked travel accounts and awarded names to plants and animals not yet scientifically described. Here Rafinesque took the description of the "marmotte" from the Lewis and Clark narrative and named it the "dog-mouse," *Cynomys socialis.*[3081] Two years later the "dog-mouse" was named again—by David Warden in his notable three-volume *omnium gatherum* published in Edinburgh.[3082] Warden was then living in Paris, certainly unaware of Rafinesque's obscure publication. Warden wrote that the "Barking squirrel" was probably a new species of marmot "to which the name Missouri marmot, Monax missouriensis" might be given.

The Mole

Moles do "great injury to our meadows, and frequently also to gardens" wrote Barton in 1793 in his "Notes" prepared for Thomas Pennant.[3083] A veritable menagerie of topics intervened before Barton again took up the topic of moles. Judge Richard Peters, first president of the Philadelphia Society for Promoting Agriculture, asked Barton, who had been elected a member in 1790, for a contribution for the Society's *Memoirs.* Barton addressed a letter to Peters 19 December 1809 with questions on the life history of the mole. This was

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3075 *PMPJ* 2 (1805) Pt. I: 159.

3076 APS "Minutes," 295–296, 312–313; Simpson, "Paleontology," 151, fn. 23.

3077 Seller's *Peale's Museum,* 186, 175. Live prairie dogs from Fort Mandan according to Jackson, *Lewis and Clark,* 236.

3078 Coues's critique, quoted here in part: "pure bosh...respecting the harmonious and confidential relation between [the burrowing owl] and the mammals...according to the dense pathos of such nursery tales, in this underground Elysium the snakes give their rattles to the puppies to play with, the old dogs cuddle the owlets, and farm out their own litters to the grave and careful birds..." *Birds of the Northwest* (Washington, D.C., 1874), 324.

3079 Jackson, *Lewis and Clark,* 292.

3080 William Guthrie, *A New Geographical, Historical, and Commercial Grammar; and Present State of the Several Kingdoms of the World* (Philadelphia, 1815, 2 vols.), 2: 302. [Now *Cynomys ludovicianus* Ord, 1815. MSW.]

3081 *Amer. Monthly Mag. Crit. Rev.* 2: 43. 1817. [Rafinesque also used the epithet "grisea" (1817) and this name is also synonymized to *Cynomys ludovicianus.* MSW.]

3082 Warden, *Account,* 1: 225–228.

3083 Sterling, *Barton's Notes,* 31. Pennant called the insectivore the "Radiated mole."

duly read before that Society 10 January 1810, and published in its *Memoirs* that year. Barton's interest in ecology is noteworthy as he queried the farmers:

1. *What kinds of grounds are most frequented by this animal? Is it ever found in the wetter meadows?*
2. *What vegetables does it chiefly consume? Does it injure the roots of the Red-Clover? Does it ever injure the Indian-corn.*
3. *What insects does it eat? Does it not devour grubs, and other larvae, of Beetles, &c.*
4. *In what way does it prove most injurious?*
5. *By loosening the earth, and thereby enabling the radicles of different plants to progress with more facility; and by devouring a portion of the radicles it meets with, does not the mole of the United States do quite as much good as harm?*
6. *At what season, of the year, does the mole bring forth her young?*
7. *May we not, by preserving moles from unnecessary destruction, put their beautiful fur to useful purposes in the U. States?*[3084]

Barton recognized two moles in the Philadelphia countryside, "which are, in many respects, different": the Eastern Mole, *Sorex aquaticus*, now known as *Scalopus aquaticus*, a short-tailed animal of drier fields, in spite of its scientific name; and the Star-nosed Mole *Sorex cristatus*, now known as *Condylura cristata*, with a long tail and a star-shaped disc at the end of the snout. A short-tailed shrew, the Miniscule Shrew, collected on the Lewis and Clark expedition he identified as *Sorex minutissimus* of Zimmermann.

Peter Kalm first made known the Star-nosed Mole to his mentor Linnaeus, though he did not characterize the differences from the common mole in his *Travels*.[3085] We found no other letters to or from Barton concerning the mole.

The Bighorn, or Tayè

A "Wild American Sheep," *Ovis canadensis*, from the Canadian Rockies was first exhibited in Savage's Columbian Gallery[3086] in New York City in 1803, before Peale displayed the Lewis and Clark specimen in Philadelphia. The bighorn skin had been brought to New York by Mr. Duncan McGillivray who had traveled with David Thompson of the Northwest Company.[3087] McGillivray told how on 30 November 1800 the party was on the Bow River "at the foot of the first ridge" entering the mountains when they saw twenty mountain sheep and shot four. The largest specimen was sent to Edward Savage, artist, who made two good paintings of the bighorn, for his Gallery. So Savage informed Dr. Mitchill who announced the event in his *Medical Repository*.[3088] Mitchill evidently had consulted Pennant's *Arctic Zoology*

3084 *Mem. Philadelphia Soc. Promot. Agric.* 2 (1810): 137–139.

3085 Benson, *Kalm*, 101. Neither Martti Kerkkonen nor Esther Larson commented on Kalm's mole in their extensive writings.

3086 Columbian Gallery and City Museum in New York had succeeded Tammany American Museum when acquired in 1801 or 1802 by the artist and engraver Edward Savage (1761–1817), who moved 200 paintings and engravings from his museum in Boston. His skilled curator and taxidermist, John Scudder (d. 1821), purchased most of the collection with its live and stuffed specimens, some of which had come from Peale, in 1810. He opened The New American Museum, the contents of which were purchased after his death by P. T. Barnum. On Savage, see Sellers, *Peale's Museum*, 200; Groce & Wallace, *Artists*; see Charles Henry Hart, *Edward Savage, painter and engraver, and his unfinished copper-plate of "The Congress voting Independence"* (Boston, 1905); and Frederick Coburn in *DAB*. On Scudder, Edward P. Alexander, *Museum Masters* (Nashville, 1983), 65–66; Irving Wallace, *The Fabulous Showman; The Life and Times of P. T. Barnum* (New York, 1959), 47–48; Greene, *American Science*, 101, 104, portrait, 101; and Cantwell, *Wilson*, 153–154.

3087 David Thompson (1770–1857), Hudson's Bay fur trader, see Ewan, *Dictionary*, 219.

3088 *Med. Repos.* 6 (1803): 237–238.

(London, 1783–1784, 2 vols.), where reference to the animal and an illustration are cited. Miguel Venegas, Jesuit author, collected reports on natural history made by padres living in Baja California and published *Noticia de la California* (Madrid, 1757).[3089] In the meantime, John Heckewelder related in "Notice of travels of a Mohawk Indian" what Daniel Green had seen in "Louisiana," surely the northern Rocky Mountains.[3090] The Mohawk traveler saw the grizzly,[3091] moose,[3092] and what must have been the mountain goat,[3093] and sheep with large horns, the bighorn. Barton took the occasion to append a note to Heckewelder's short article, comparing the mountain sheep with the argali[3094] of Asia, adding what Venegas said about the animal the Monqui Indians called the Tayè. Barton owned what must have been one of the few copies of Venegas in this country at the time. Surely spurred by Mitchill's report, he published in 1805 "Some account of the Taye, a species of Sheep," in his own *Philadelphia Medical and Physical Journal*.[3095] Barton said he had received a report from Dr. John Watkins of New Orleans "at least five years since" from the "stony mountains about the headwaters of Missouri."[3096] The only surviving letter from Watkins is dated 1802, and what survives contained no information on the bighorn.[3097] Perhaps there was another part of Watkins's letter, now lost, that had prompted Barton's letter to Lacépède in Paris, dated 2 October 1802, but not published until 1805. "What will you say," Barton wrote, "when I inform you that there has lately been discovered an American species of sheep!"[3098]

Barton quotes Buffon that "America has still less pretensions to the sheep," but Venegas says the Jesuits of California had found two kinds of "deer," one with horns like a ram, hoofs cleft like an ox's with delicious flesh. The second was larger than the common sheep, and with more wool, easily spun. He has now decided that Venegas's illustration "rather forbids the idea that the Asiatic and the American animal are the same," but then he adds that if found related to the Argali, it is another probability that North America and Asia were once linked.

The Lahontan Indians, he records, refer to the Tahuglauk who reside "upon a great salt-lake, far to the west of the Mississippi." They made a medal with a picture resembling sheep. The medal has since been melted down—Barton thinks the story is part fable and part truth. He compares the Tartar and California Indian names for "mountain goat" and refers to Pallas, *Comparative Lexicons*, 1, 334, and his own *New Views*.

Barton has now received added information from the "Stony Mountains." Tayè is nearly as large as elk.[3099] The spiral horns are enormous. That the horns grow and finally enter the mouth, preventing it from eating is "doubtless, *some fable* mixed with this part of the relation." The horns are used for utensils. He finally mentions Lewis.

Lewis first saw "a great abundance of the Argalia or Big horned animals" near the mouth of the Judith River 29 May 1805,[3100] and on 13 July Jefferson received "4 horns of the Mountain ram or Big horn." In November Barton wrote Jefferson "I long to see the large horns of a species of Sheep. I doubt not, this will prove to be the Tayè of California, described and figured by Venegas in 1757."[3101]

3089 London edition, *A Natural and Civil History of California*... (1759, 2 vols.), available as Readex microprint (New York, 1966). Translated into French, German, and Dutch.

3090 *PMPJ* 1 (1804) Pt. 1: 75–77.

3091 [*Ursus arctos* L., 1758. MSW.]

3092 [*Alces alces* L., 1758. MSW.]

3093 [*Oreamnos americanus* de Blainville, 1816. MSW.]

3094 [The Argali sheep are *Ovis ammon* L., 1758. MSW.]

3095 *PMPJ* 2 (1805) Pt. 1: 106–113. Venegas plate reproduced.

3096 On considerable activities of Watkins, one-time mayor of New Orleans, see Duffy, *Louisiana*, 1: 183 passim.

3097 Barton papers, APS.

3098 *Philos. Mag.* 22 (1805): 99–100.

3099 [*Cervus elaphus* L., 1758, American Elk. MSW.]

3100 Cutright, *Lewis and Clark*, 271. The easternmost geographic race, *Ovis canadensis audubonii* Merriam, was the first made known to naturalists.

3101 Jackson, *Lewis and Clark*, 271.

Barton has been criticized for not acknowledging information from some other Americans, but Jefferson had insisted that Lewis get the credit for his new discoveries, and he and Barton expected Lewis to publish his own account of his findings on his journey. Lewis, however, died in 1809 without editing and publishing his journal. In Supplement Two of his *Philadelphia Medical and Physical Journal* (1807) Barton again mentions Lewis's report, adding a note on Tayè,[3102] repeating again that his original information had come from Watkins.

Once again Barton has changed his mind. "As Zimmermann suspected thirty years ago, this is the Argali of the Tartars, the Ovis Ammon of Linnaeus." Our "Bighorn" inhabits three fourths of the globe. It was known to the Spanish historians before 1633. Geoffroy[3103] considered it new. Barton then concluded, "A complete description of this N.A. animal with an account of its manners, food, period of life, &c. &c, would be a very acceptable present to Zoologists." Meanwhile in England George Shaw had described the bighorn from McGillivray's Canadian specimen and in 1804 gave it the name *Ovis canadensis*. Peale exhibited Lewis's bighorn in the Quadruped Room of his museum. Later Richard Harlan based his description of the Mountain Sheep on these specimens in Peale's museum.[3104]

The Elk

As early as 1768, according to a local newspaper, an eight-pronged elk, *Cervus canadensis*,[3105] "fourteen hands high" was to be seen.[3106] Several short accounts of North American animals appeared in Barton's *Philadelphia Medical and Physical Journal*, "extracted from the Editor's *Fragments of Natural History Part second* not yet published." In launching his *Journal* Barton's concern was putting these scattered unfinished articles in print lest his "Elements of Zoology" should finally fail to be published in book form. One such article was "Account of the Cervus Wapiti, or Southern Elk of North America."[3107] The vernacular "Wapiti" for what is generally known in this country as "elk" is derived from Barton's scientific name *Cervus wapiti*, bestowed in 1806 from his appreciation of Indian names for fauna and flora. Wapiti is based on the Shawnee name, which means literally "white deer." The Old World "elk" is a true moose distinguished by webbed antlers, whereas curiously the American elk is a relative of the European red deer. Wapiti formerly occurred over the greater part of North America between the parallels of 35 degrees and 50 degrees and survives today in fair numbers in the Rocky Mountains. The American elk had been scientifically named *Cervus canadensis* three decades before Barton by J. C. Polycarp Erxleben (1744–1777), a natural historian and Göttingen professor, in his *Systema Regni Animalis*.[3108]

In 1796 Jonathan Carver, *Travels*, 298–299, had pointed out that "most authors confused [the moose[3109]] with the elk, deer, or carraboo,[3110] but it is a species totally different." Peale had exhibited an elk early in 1795, and when preparing the exhibit failed to substantiate the existence of an orifice beneath the eye peculiar to the elk, said to be an auxiliary breathing

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3102 The documented history of the bighorn, its geographic races, including the Venegas Baja California race, *Ovis canadensis cremnobates* Elliott, provided by Glover M. Allen, *Extinct and Vanishing Mammals of the Western Hemisphere* (Washington, D.C., 1942), 358–360, and 372–373.

3103 Etienne Geoffroy St. Hilaire (1772–1844) became professor of zoology in Muséum Histoire Naturelle in Jardin des Plantes, Paris, where he established a zoological collection.

3104 "The argali of both continents form but one species, having passed originally from one country to the other on the ice," Harlan, *Fauna americana, being a description of the mammiferous animals of North America* (Philadelphia, 1825), 262.

3105 [Now referred to *Cervus elaphus* L., 1758. MSW.]

3106 *Pennsylvania Chronicle* 2 (1768), 179, in Du Simitiere papers, "Mammalia de America septentrionalis," LCP.

3107 *PMPJ* Suppl. 1 (March 1806); 35–55, and in Sterling, *Barton's Notes*, 8–12.

3108 *Systema Regni Animalis per Classes ordines, genera, species, etc. Classis I. Mammalia* (Leipzig, 1777).

3109 [The American Moose is *Alces alces* L., 1758. MSW.]

3110 [The circumboreal Caribou, found in North America, is known as *Rangifer tarandus* L., 1758. MSW.]

apparatus and an organ of smelling.[3111] In this conclusion Barton and Peale were to disagree. Godman, who had agreed with Peale, declared Barton's notion "altogether speculation."[3112]

A nameless showman exhibited a "gigantic stag of the Missouri"—admittance-one shilling each—"for a few days at the Assembly Rooms, Glasgow" in 1822. A ten-page booklet entitled *An account of the Wapeti*,[3113] designed for the visitor, tells how the "extraordinary nondescript animals" were brought by a German traveler in 1817 from the Upper Missouri River country where the Indians had domesticated the animals for sledge power as well as venison. In England Lord James Murray of Datchet near Windsor is reported as having bred the animals for three generations, evidently from an earlier introduction. Though the author of the booklet is not revealed, the back cover provides a clue. William Bullock's Lapland exhibit "shortly to be exhibited in Glasgow...and a herd of living reindeer" had been seen by 58,000 visitors to his Egyptian Hall in London."[3114] Bullock evidently was attracted to the scheme of domesticating the Wapeti along with the reindeer.[3115] From other handbooks published by Bullock for his exhibitions in Liverpool and London, this Glasgow booklet may be ascribed to him with confidence. From Sabin we learn that a Dublin edition was published in 1822, differing from the Glasgow printing in having fifteen pages instead of ten, and the word "Elks" in the title instead of "Stag."[3116]

The "late Doctor Barton" is credited on page six in the Glasgow edition as having adopted the name Wapeti. It seems unlikely that Bullock would have known of Barton's account in the *Philadelphia Medical and Physical Journal* in 1806 describing the wapeti or wapiti. Who the "German traveller" on the upper Missouri who returned in 1817 with the elk was is a puzzle for the historian.[3117] Though the trappers were generally Frenchmen, perhaps a German passenger on a flatboat may have been the collector. One more connection obtains: William Elford Leach (1790-1836) conveyed a description of the wapiti to the Linnaean Society about 1817[3118] and purchased on behalf of the British Museum some of Bullock's specimens at the dismantling auction of the Museum. In any event, William Bullock and William Leach informed the British public of the North American elk, Barton's wapiti,[3119] from the upper Missouri River country.

The Peccary

The wild pig of the New World, the peccary,[3120] was known to the Tupi-Guarani for at least four hundred years as *tayasu*, which led Linnaeus in 1758 to classify it with the barnyard domesticate as *Sus tajacu*. The Caribs called it *pakira*. Barton noticed the peccary briefly when

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3111 Seller's *Peale's Museum*, 90 and 343, fn. 11.

3112 Godman, *American Natural History*, ed. 3, 2: 110. The elk plate facing p. 117 drawn by C. A. Lesueur was based, judging from other instances, on the Peale Museum exhibit.

3113 *An Account of the Wapeti, or gigantic stag of the Missouri, lately discovered in the interior of North America, and now Exhibiting, for a few days, at the Assembly Rooms, Glasgow, previous to their removal to London. Open from 11 till 5. Admittance—one shilling each.* Glasgow: printed by John Graham and Co. 1822. 7 by 4 inches, brown paper printed wrapper.

3114 "William Bullock (1773-1849)" will be an appropriately illustrated book of widest appeal to naturalists and museum habitués. William Herbert Mullens & Hatty Kirke Swann, *Bibliography British Ornithology*... (London, 1919), 107-110, and especially Richard D. Altick, *The Shows of London* (Cambridge, Mass., 1978), 235-252, and 274; W. S. Shepperson, *Hist. & Philos. Soc. Ohio* 19 (1961): 144-152; A. L. Kaeppler, *Man*, new series 9 (March, 1974): 68-92.

3115 [*Rangifer tarandus* L., 1758, is known as Caribou in North America, but Reindeer in Europe. MSW.]

3116 Sabin, *Dictionary*, 49570. Perhaps the Dublin exhibit preceded that at Glasgow.

3117 The chronology in John F. McDermott, *Travellers on the Western Frontier* (Urbana, 1970), 36-37, merely suggests a passenger with a fur-trading party.

3118 "*Thomson's Ann. Philos.* [= *Ann. Philos. Mag. Chem.*] IX. 325" (1817) is mentioned in the *OED* entry for wapiti.

3119 [*Cervus elaphus* L., 1758. MSW.]

3120 [The Collared Peccary extends into the southwestern U.S. It is now recognized as *Peccari tajacu*, but was originally described as *Sus tajacu* by Linnaeus, 1758. MSW.]

he wrote notes for Pennant, speculating that the wild hog of the country west of the Shining Mountains was "perhaps the Tajacu" of the lands to the south, and distinct from the feral hog.[3121] The domestic pig had been named *Sus scrofa* by Linnaeus. His animal included not only wild forms, but domestic swine and forms reverted to the wild. The origins of the domesticate may be in southeastern Asia. Barton reported "the cranium of a large species of Sus, or Hog, in a state of excellent preservation" discovered in a "nitrous cave" on Crooked Creek, Kentucky, by "the very respectable and ingenious Dr. Samuel Brown of Lexington."[3122] Barton did not mention the animal again, but it proved to be the first identification of a fossil peccary, the determination by Dr. Wistar. Caspar Wistar's habit of making verbal communications rather than printed notices of his findings, in the opinion of George Gaylord Simpson, deprived paleontologists of his exceptional acuity in osteology.[3123] The story of the introduction of the pig into the New World, and its relation to the three species of peccary now recognized by mammalogists, has been elaborated by Donkin with full documentation and interesting maps.[3124]

The Grizzly Bear

It perhaps is not to be wondered that Barton confused the polar bear, about which he had read reports in MacKenzie and in Buffon, and the grizzly bear,[3125] which he saw in the basement of Peale's Museum. He wrote to Lacépède in 1802, the letter published in 1805:

> *The ursus maritimus, or polar bear (ours de mer of Buffon), is said to be a common animal in the country adject to a river called the Plata, which empties itself into the Missouri about four hundred leagues above the junction of this latter river with the Mississippi. As the Missouri, from its source to its mouth, pursues a course nearly due east, we find that the white bear is common twelve hundred miles west of the Mississippi...I have seen a number of the claws of one of these animals from the Plata, and they appear to me to be the claws of the great polar bear...It is not certain, however, that the white bear of the river Plata is the ursus maritimus. Perhaps, it will prove to be a new species.*[3126]

Barton was reflecting Peale's opinion: it "seems to be a separate class of White Bear...his hair is a kind of straw colour or light sorrel."[3127] Considering the color variants that obtained, the grizzly bear lacked the distinctiveness of other species. C. Hart Merriam a century later would recognize several different "species" for what are considered color forms.[3128]

It was probably to Heckewelder that Barton wrote:

> *If you know any good hunter, do inquire if they can give any information about the time bears copulate, how long the female goes with young; whether they have seen the young in the mother's womb: & at what*

3121 Sterling, *Barton's Notes*, 25-26.

3122 Samuel Brown, Lexington, Kentucky, 27 March 1808. Barton papers, APS. Sellers, *Peale's Museum* 75, reports Dr. Brown's sending skeletons of Wabash man to Peale's Museum about 1794.

3123 Simpson, "Paleontology," 151-155, and a portrait.

3124 R. A. Donkin, "The Peccary—with observations on the introduction of pigs to the New World," *Trans. Amer. Philos. Soc.* 75 (5) (1985): 1-152.

3125 [The two bears are distinct. *Ursus maritimus* Phipps, 1774, is the Polar Bear, and *U. arctos* L., 1758, is the Grizzly Bear. MSW.]

3126 *Philos. Mag.* 22 (1805): 101-102.

3127 Jackson, *Lewis and Clark*, 296.

3128 *N. Amer. Fauna.* [Color varies in *Ursus arctos*, the Grizzly Bear, ranging to cinnamon and blonde even in the Western Black Bear, *Ursus americanus*. WMW.]

time? & of what size? I should suppose, there must be hunters not very far from you, who will be able to give information on this curious head. Do you know when the Raccoon[3129] *brings forth her young?*[3130]

Charles Josslyn of Oxford, New York, had not been successful in obtaining any information for Barton on the breeding of bears. He wrote 9 November 1807:

Hunters differ in opinion respecting this matter, and you know they are generally illiterate men ever fond of exaggerating in their hunting stories—The best information I could obtain was from a certain Mr. Leacke late sheriff of Chinango County and a man of veracity—he was a surveyor in the early settling of this country he informed me that a friend of his killed a She Bear sometime in the month of January he thinks the last of the month The bear had cubs at that time the size of a common young kitten and not larger—[3131]

Peale's Museum, in the opinion of an English visitor, Charles Janson, was "a striking instance of the persevering industry of an individual...The Proprietor is Mr. Charles W. Peale, by profession a painter, which he relinquished, and became a virtuoso." Rembrandt Peale gave Janson a tour in 1808, and he found the family "amiable and loving." Janson witnessed a Scarlet Ibis[3132] "feeding voraciously on raw beef" and a bird from Louisiana, "exactly resembling the English Magpie,[3133] but much larger," and a "long-clawed grisly bear, from the source of the Missouri."[3134] This was the grizzly—"the first seen in the East...brought back by a French trader" in 1803, mentioned by Sellers.[3135]

Barton also delighted in keeping or observing wild animals. Though he did not possess a bear, and depended on Peale for his opportunity to observe, over the years he housed an opossum, horned lizard, snowshoe hare, rattlesnakes,[3136] and others. He kept informed of live exhibits at Peale's and visited with his pupils for their instruction.

The Skunk

Barton had learned by 1793 that a white skunk, probably an albino, "has been seen, in the western country," and he had learned that it swims large rivers. On an undated trip:

...in the course of our ride, our noses were offended with the loathsome smell of the Viverra Putorius, commonly called in the United States, Skunk or Polecat.[3137] *This is the Striped Weasel of Pennant, Le Conepate of Buffon. This animal is pretty well described and figured by*

3129 [Originally described by Linnaeus with the bears in 1758 as *Ursus lotor*, the raccoon is distinguished now as *Procyon lotor*. MSW.]

3130 Barton papers, APS, copy.

3131 Barton papers, APS.

3132 [*Eudocimus ruber* L., 1758. AOU.]

3133 [The American Magpie, *Pica hudsonia*, is distinguished from the English Magpie, *Pica pica*. AOU. AUD.]

3134 Charles W. Janson, *The Stranger in America...* (London, 1807), 191-192.

3135 Sellers, *Peale's Museum*, 206-207.

3136 [*Didelphis virginiana*, *Phrynosoma cornutum*, *Lepus americanus*, and *Crotalus*, respectively.]

3137 *Viverra putorius* L., *Systema Naturae, 10*, 44, 1758, refers to the Eastern Spotted Skunk *Spilogale putorius* L., 1758. It is less common in eastern North America than is the Striped Skunk, *Mephitis mephitis* Schreber, 1776.

naturalists though as usual with regard to the animals of North America, there is some confusion in their accounts.[3138]

Then thinking of his materia medica Barton added:

Nothing can exceed the fetor of this animal. It is not only extremely potent, but very volatile, and may be smelled at a great distance. A fluid enbued with such properties, may perhaps, at some future period, be applied to valuable purposes in medicine. This is not a mere suspicion. Dr. Carrington, who resided at Old-Fort-Schuyler, assured me, that he had given a few drops of it, with the most decided advantage, in cases of spasmodic asthma. The dose was two or three drops taken out of the animal immediately after it had been killed.[3139]

The Sloth

Indian legends were of interest to both Barton and to Heckewelder, who reported an "Indian account of a remarkably strong and ferocious beast, which (they say) visited the northern parts of the State of New York, about two hundred years ago," a mystery.

There was also the "Jagisho or naked animal, or Bear, as some of the Indians call it" larger than the largest bear, short thick legs, long-clawed, long hair on head, neck and lower part of the legs, almost hairless otherwise. A carnivore and lake-dweller, the last one killed about two hundred years ago. Barton queries whether this can have been the giant sloth, the "Tadigrada."[3140]

Although these descriptions do not fit a sloth, Barton had been aware of the publication of separate accounts by Jefferson and Wistar on the remains of the Giant Ground Sloth, *Megalonyx jeffersoni* (Desmarest) in the *Transactions of the American Philosophical Society* 4 (1799): 255–256, and 526–531. These toe and thigh bones had been excavated in Green Briar County, now West Virginia.[3141] Sloth remains have also been found in southern Louisiana.[3142]

American Badger

Again the persistent question: are American animals really the same as their European counterparts? The badger is a well-known aggressive animal in our folklore, persisting in our surviving verb "to badger," though few persons have ever seen one. The early eighteenth century French trappers in the North knew the badger as *blaireau*, though they gave scant if any thought to how much it differed from the animal they knew back in Europe. There were a few references to the distinction between the Old World and New World badgers, as when Johann Reinhold Forster in his *Catalogue of the Animals of North America* (1771), 7, cautiously noticed that the American badger was a "N[ew] S[pecies]?" the notice inserted "by the leave" of Thomas Pennant.[3143]

The American badger was distinguished from its European counterpart, *Meles meles*, by a remarkable naturalist, Johann Christian Daniel von Schreber (1739–1810), who wrote a classic work on mammalogy, whose herbarium contained about 12,000 species, who sent

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3138 Some confusion indeed, as two genera are included in this note: *Mephitis mephitis* L., 1758, the North American Striped Skunk, Striped Polecat; and *Viverra putorius* L., 1758, the Spotted Skunk, *Spilogale putorius* L.

3139 Barton papers, APS.

3140 *PMPJ* 1 (1805) Pt. 2: 161–165.

3141 Simpson, "Paleontology," 153–154. [Actually the fossil ground sloth *Megatherium*.]

3142 George H. Lowery, Jr., *Mammals of Louisiana and Its Adjacent Waters* (Baton Rouge, 1974), 519.

3143 Warden, *Account*, 1 (1819): 201–202, a mix here of American badger and the woodchuck or "ground hog."

grasses to Muhlenberg in Lancaster, and who was director of the Erlangen Botanic Garden. In 1777 Schreber (by a somewhat involved circumscription) gave the specific name *taxus* to the American badger. Today it is known as *Taxidea taxus* Schreber.[3144]

When Charles Willson Peale was reporting to Jefferson on the progress of the Lewis and Clark Expedition in his letter of 3 November 1805, he wrote "the magpye was in health," referring to the moot issue as to the distinctiveness of the American magpie from the Eurasian bird. Peale added "the Badger appears to be different."[3145] This reference was not to a live survivor, as with the magpie, but to a skin forwarded from the Missouri River country. Peale had examined the Buffon plate and William Turton's *Systema Naturae*,[3146] but was yet to see Pennant's *Arctic Zoology* (London, 1783–1784, 2 vols.) for the badger. Jefferson wrote to Volney 11 February 1806 that Lewis had sent "specimens and information" on, among other novelties, "the badger not before known out of Europe,"[3147] that is, an animal different from the Eurasian badger, which ranges from the British Isles to Japan.

Is the watercolor (Figure 67) among Barton's papers his own drawing, or is it a lost drawing of Peale's? In a letter 26 January 1810 from Clark to William Douglas Meriwether, at the time representative from Albermarie County to the General Assembly of Virginia, he wrote that "Mr. Peale" had drawn the "Braroe," his rendering of the French *blaireau*.[3148] Barton would have made his drawing from the skin at Peale's Museum. As on other occasions this was a sketch only of the head and neck of the animal, with a quick sketch on the verso of the paper. Once more it was the Lewis and Clark Expedition that brought an American animal, as distinguished from the Eurasian, scientifically to the attention of the naturalist. Barton's memorandum on the American badger is reproduced in Sterling, *Barton's Notes*, 44.

The Indian Dog

Canis familiaris, the domestic dog, was baptized by Linnaeus in his classic *Systema Naturae*, ed. 10, perhaps the best example of the maxim "Deus creatavit; Linnaeus desposuit." Zoologists now agree that Uppsala, Sweden, is the elected "type locality," but the probable ancestral forms of Eurasian origin have been reconstructed, and it is these forerunners that interest us rather than a hypothetical type specimen. The North American Indian before Columbus had no horse, but did have some varieties of domestic dog. The foundation study "Dogs of the American aborigenes" was published in 1920 by Harvard Zoologist Glover M. Allen with notes on general origins.[3149]

Vertebrate paleontologist William Diller Matthew (1871–1930) of the American Museum of Natural History, the author of the classic *Climate and Evolution* (New York, 1939), was a lifetime student of mammalian fossils. Matthew noted that there was no great difficulty in distinguishing skulls of dogs from those of wolves or coyotes in prehistoric Indian sites. He believed the domestic dog of the Old World was brought with migrating people to the New, and that the dog of the Indian did not result from domesticating American wolves or

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3144 Johann Christian Daniel von Schreber (1739–1810), *Die Säugethiere in Abbildungen nach der Natur* (Leipzig, 1774–1810). Jackson, *Lewis and Clark*, 240; for Schreber, see *TL-2*.

3145 Jackson, *Lewis and Clark*, 268. Did Peale exhibit a live badger? There is no record in Sellers's writings. In 1843 Audubon brought one from Fort Union to New York (Audubon & Bachman, *Quadrupeds* 1 (1846): 363–364, plate 38).

3146 William Turton (1762–1835), *A General System of Nature...translated from Gmelin's last Edition of the... Systema Naturae, Animal Kingdom* (Swansea, 1802, 4 vols.).

3147 Jackson, *Lewis and Clark*, 291: Richard Harlan, *Fauna americana, being a description of the mammiferous animals of North America* (Philadelphia, 1825), 57, for references to Peale's Museum specimens.

3148 Jackson, *Lewis and Clark*, 490; Raymond Darwin Burroughs, *The Natural History of the Lewis and Clark Expedition* (East Lansing, Mich., 1961), 70–73.

3149 *Bull. Mus. Comp. Zool.* 58 (1920): 431–517. 12 pls. [The genetic structure and relationships of the domestic dog has most recently been explored with molecular markers and microsatellite data. Cf. Heidi, G. Parker et al., *Science* 304 (5674): 1160–1164. 2004.]

coyotes.[3150] The archaeologist William Haag, who made a study of the extensive literature on the history of the dog in North America, concluded that most was purely speculation. He believed the dog was first introduced into America in a late Mesolithic stage of cultural development about 2,500 years ago following its domestication "not long before 6000 B.C." Domestication was accomplished more through the efforts of the dog than of man.[3151]

Barton brought together reports from the earliest European references of dogs among the Indians, as gleaned from his own library. Columbus, according to Peter Martyr, found the Alco "mute little dogs in the island of Juanna in 1492." These were deformed and eaten by the natives. The Mexicans also raised dogs that they castrated to fatten for food. De Soto found the Indians raised many dogs for food. Barton concluded that dogs were not specifically separable. Acosta, Pennant, Gomara, Buffon, and William Robertson all thought there were different origins. Barton decided the Indian dog was a cross probably of wolf[3152] and fox,[3153] what the fur traders called the "half-wolf-breed."

Though John Davidson Godman, professor of anatomy at Rutgers Medical College, did not admit Barton's "conjectures" on the origin of the dog, "except as an evidence of the vividness of his imagination," he "fully coincided" with Barton's replies to the "illiberal observations" of William Robertson on the history of America. In his *American Natural History,* Godman was unable to arrive "at any satisfactory conclusion" as to the source or origin of the domestic dog.[3154] Incidentally, Godman is a prime subject for a full biography. Born in Annapolis, Maryland, 20 December 1794, the son of a Revolutionary War officer, Godman was a practicing physician (M.D., 1818), teacher, editor, and effective writer, with a fresh readable style. He shared an interest in vertebrate paleontology with Richard Harlan. He accused Harlan of blatant borrowing from Anselme Gaëtan Desmarest's *Mammalogie* (Paris, 1820–1830, 2 vols.). He died of tuberculosis at 36.

Barton sent his article on Indian dogs for publication in *Philosophical Magazine* in London 1803, but perhaps was without knowledge of its appearance. With the founding of his *Philadelphia Medical and Physical Journal* he included the essay in the first volume (1805). He had reported on John Bartram's observations near his home on the Schuylkill River on seeing Indian dogs with erect ears accompanying their masters. Barton wrote that their aspect was "much more that of the wolf than of the common domesticated dogs. His body in general, is more slender than that of our dogs. He is remarkably small behind. His ears do not hang like those of our dogs, but stand erect, and are large and sharp-pointed. He has a long small snout, and very sharp nose."[3155]

William Bartram described wolf-like dogs of the "Chikkosah" and Creek Indians, and he also believed the Creek dogs are allied to wolf and fox. Their ears are large and stand up pointed. Their bark is more like the howling of a wolf. They are less docile and more savage, and lack "fidelity" to their masters, who are often cruel to them and seldom feed them—though Barton knew exceptions. They seldom pet them. Barton's article abounds in Mexican and Indian names for dogs. The Delawares acknowledged that their breed came from the Six Nations.[3156]

3150 W. D. Matthew, "Phylogeny of dogs," *J. Mammal.* 1 (1930): 133. [Coyotes, *Canis latrans* Say, 1823, do belong to the same genus as dogs, as do wolves. Hybrids are known to exist, such as the coy-dog. MSW.]

3151 Wm. G. Haag, "An osteometric analysis of some aboriginal dogs," *Univ. Kentucky Rep. Anthropol.* 7 (1948): 105–264.

3152 [Wolves and domestic dogs both belong to the genus *Canis* as recognized by Linnaeus, 1758.]

3153 [The recognition of foxes as canid carnivores is longstanding. The three larger fox genera in North America were originally described as *Canis* in the 18th century, but are now *Alopex lagopus* (Arctic Fox), *Vulpes vulpes* (Red Fox), and *Urocyon cinereoargenteus* (Gray Fox). Foxes belong to the dog's family Canidae, even to the subfamily Caninae, but their relationship diverges at the genus level and they do not interbreed. MSW. WMW.]

3154 *American Natural History* (Philadelphia, 1826–1828, 3 vols.), vol. 1: 237, quoting Barton on pp. 251–253.

3155 Barton papers, APS. Compare our Figure 29 and Matthias Barton's drawing in Pennsylvania Academy, record in Groce & Wallace, *Artists.*

3156 *PMPJ* 1 (1805) Pt. 2: 3–31.

As early as 11 February 1798 Barton had requested observations on the Indian dog from Heckewelder, who was then living in Bethlehem. "Any information which you may collect for me concerning the Indian dog, unmixed," was a request he kept alive in his letter of 1808, which, though mostly on linguistics, included a sixth request:

> *A full description of the Indian Dog, among the Chippewas, is requested. Every information, on this subject will be acceptable to me. The Indian opinions and conjectures. The general weight of the animals. If possible, the skull (I mean all the bones of the head) of this species of dog. Such a specimen may enable us to decide, with considerable certainty, what species of Canis*[3157] *the Chippeway dog is most nearly allied to.*[3158]

Still in pursuit of data, Barton made a request of his nephew, Robert Rittenhouse Barton, who was in the army and stationed at "Erie." Robert replied 22 March 1814: "I shall be enabled to procure the head of an Indian Dog, on our next visit to Detroit, where I have seen them."[3159]

That Barton's commentary was overlooked by later writers on the Indian dog was certainly due in large part to the small circulation of his *Philadelphia Medical and Physical Journal*—the scientific reader was unaware of its existence. For example, the president of the Academy of Natural Sciences in Philadelphia, Samuel George Morton (1799–1851), was to attract attention for his collection of crania and his conclusion that races of man differ not only in skin color but in skull characters. He also published on the "Antiquity of some races of dogs."[3160] Though Alpheus Spring Packard, Jr., described 580 species of insects and other animals, he was writing on evolution in his later years. He published on the "Origin of the American varieties of the dog" in the journal of which he was a founder.[3161]

Fossils

The year 1636 carried the first report of fossil vertebrates in present United States, for then Samuel Maverick on a visit from Massachusetts, reported seeing the skeleton of a whale about sixty miles above the mouth of James River. John Banister in 1686 showed the Reverend John Clayton "the joint of a Whale's Back-bone, and several teeth, some whereof he said, were found in Hills beyond the Falls of James River, at least, a Hundred and fifty miles up into the Country."[3162] That they were probably of the mastodon[3163] and from west of the Alleghenies has been suggested by Henry Fairfield Osborn.[3164] Catesby concurred with "the Negroes, native Africans," that large teeth found in North Carolina were "Grinders of an Elephant."[3165]

Interest blossomed when a trader, Christopher Gist, passed near Big Bone Lick, southwest of Covington, now Boone County, Kentucky, in 1751 and carried off two teeth of what was certainly the mastodon.[3166] John Bartram learned of the fossils in a long letter dated 22 August 1762, from a fellow Quaker, James Wright of Delaware County, Pennsylvania.

3157 [Wolves available for potential hybridization would have included *Canis lupus* (described by Say in 1823), the Gray Wolf, in the northern part of the continent, and *Canis rufus* (Audubon & Bachman, 1851), the Red Wolf, of the southeastern and south-central U.S.]

3158 Copy, Barton papers, APS. Original letter, Heckewelder papers, CPSP.

3159 Barton papers, APS.

3160 *Proc. Acad. Nat. Sci. Philadelphia* 5 (1850): 85–89, 139–140.

3161 *Amer. Naturalist* 19 (1885): 896–901.

3162 Ewan & Ewan, *Banister*, 331.

3163 [*Mammut americanum*, a likelihood with fossils noted from both locations and teeth from the Carolinas. APS.]

3164 Osborn, *Cope: Master Naturalist*... (Princeton & London, 1931), 7.

3165 Catesby, *Natural History*, 2: vii; also Simpson, "Paleontology," 135.

3166 Simpson, "Paleontology," 139–140, map of Big Bone Lick, fig. 5, and photographs of the site in 1941.

Barton published a close paraphrase of Wright's letter from a manuscript that had come into his possession.[3167]

John Bartram, Peale, Jefferson, Barton, and Wistar, all became involved in the development of American paleontology. It was Wistar who correctly identified Jefferson's *Megalonyx* as a fossil sloth. Jefferson initially believed it to be a carnivore because of its talon-like toes, but amended his observation, noting its similarity to the ground sloth *Megatherium* described by George Cuvier in 1796. Casts of these bones were sent for study to Cuvier, but it would be Anselme Desmarest who would finally describe them in 1822, honoring Jefferson.[3168]

The importance of Jefferson's gift of fossils to the Natural History Museum in Paris, particularly of mastodon bones, has been detailed by the Princeton historian Howard C. Rice, Jr., who quotes letters and records, illustrating specimens. His study of Jefferson's gift complements George Gaylord Simpson's classic history of American paleontology in which he comments on the key role of the man "who never collected a fossil or gave one a technical name, and [whose] scientific contributions were negligible or retrogressive."[3169] Yet Simpson writes that, though Jefferson never admitted the animals whose bones he appreciated were extinct, he was an important figure in the rise of vertebrate paleontology, to which he made two contributions such as no other man of the time could or did make: he helped to make paleontology a respectable and honored pursuit and he was largely instrumental in bringing together the materials necessary for its advancement.[3170]

Barton reported on his fossil finds in his "Miscellaneous Facts and Observations" in *Philadelphia Medical and Physical Journal.* In his *Discourse* under "Geology, and Mineralogy" he observed:

> *The petrifactions and impressions which are found upon many of our mountains form a most interesting subject of enquiry. I possess a large collection of such impressions, &c.; and I consider them as some of the most interesting medals of the revolutions which our country has undergone. It is, in fact, only by a very critical attention to these medals, that we shall ever be able to form a correct theory of our earth.*
>
> *...The vallies of our continent are hardly less worthy of investigation than the mountains...there are many good reasons for supposing,* [some] *were once arms of the sea.*

Barton also remembered that "as early as 1787, I communicated to my excellent friend, Professor John Walker," of Edinburgh, an account, together with drawings, of some of the teeth and other remains of the Great Elephas Mastodontus,[3171] and "As to my speculations, they cannot do much injury to science; and I venture to hope, that they will not often be more extravagant than the speculations and conjectures of some of the greatest names in geological and archaeological pursuits."[3172]

Bishop Madison sent Barton a report of mammoth remains found at a salt lick in Wythe County, Virginia. He concluded from stomach remains "and half masticated reeds, twigs, and grass, or leaves" that the animal had been an herbivore. He planned to send a part of the

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3167 *PMPJ* 1 (1804): 154–159. Our Figure 63 may relate to this. James Wright's original letter mistakenly attributed to James Logan, correctly reproduced by Simpson, "Paleontology," 140.

3168 [*Megalonyx jeffersonii, Mammalogie ou description des especies de mammifères.* Pt. II, 277-556.]

3169 H. C. Rice, Jr., "Jefferson's gift of fossils to the Museum of Nat. Hist. in Paris," *Proc. Amer. Philos. Soc.* 95 (1951): 597–627, an important supplement to Simpson's paper.

3170 Simpson, "Paleontology," 155.

3171 [Referring to the mastodon, *Mammut americanum.*]

3172 *Archaeologiae Americanae,* Preface v–vii.

stomach contents. Barton added to this report an account of "exuviae" found with "Elephantine teeth" in northern Ireland.[3173]

The very respectable and ingenious Dr. Samuel Brown of Lexington, Kentucky, "informed Barton of the recent discovery of the cranium of a large species of Sus or Hog in a state of excellent preservation."[3174] Brown wrote to John Vaughan 9 April 1805 that he would forward bones to the Society, and it was questioned that the bones were fossil. Barton also reported on other finds.

Jefferson's residence in Paris from 1784–1789 with its opportunities to meet amateurs and masters in natural history had both immediate and subsequent relations with Barton. Not only were Buffon and Daubenton among Jefferson's acquaintances, but there was the botanist André Thouin (1747–1824) who was "a great admirer of America." When in 1808 Jefferson's fossils arrived from the United States alongside the embankment on the Seine in Captain Haley's ship for delivery to the Museum, no doubt Lacépède, Barton's correspondent, and Cuvier, his mentor in comparative anatomy, were waiting[3175] to examine the treasured bones. Indeed, "what can be more interesting than histories of the species which formerly inhabited this Globe, and have now entirely disappeared?" Barton asked of his audience.[3176] Jefferson's son-in-law, Thomas Mann Randolph, knew of the Big Bone Lick fossils and wrote to Barton on 25 October 1810:

> *The late paper from Ohio on the fossil bones no doubt has been noticed by you. It has excited my attention because I had allways believed that the evidence of the dimunition in bulk of most of the known species of animals was worthy of being considered. It is not improbably that all were of gigantic stature at some very remote period of the world, and in the earliest stages of animal existence. The ancients believed in their tradition of a gigantic race of men too steadfastly for us to undertake to pronounce it alltogether a fable. The bones of the gigantic Bos*[3177] *have been found in Scotland and Ireland as well as at our famous licking place. The Megalonyx and Megatherium I find admitted to be the remains of a giant Sloth. The Ohio displays the remains of Gigantic Elephants and as this writer says various other animals some evidently Carnivorous from the Claws which appear as well as the shape and structure of the teeth.*[3178] *May not all this be the result of a certain and well known fact that where there is only the natural supply of food and animals have increased so much in numbers as to exceed it in demand, they diminish in size before they decrease in numbers? The carnivorous would of course after a time degenate with the phytephagous as the diminution in size and increase in activity of the latter would stint them in their food. These are thoughts of the moment only in myself and may or may not be worth a moments reflection to you, under which uncertainty I owe you an apology for my freedom in troubling you with them. This natural law of Animal degeneracy would of course operate very irregularly as to time and place and the extinction of some species would allso of course take place during its operation.*[3179]

3173 [More likely *Mammuthus*, the Woolly Mammoth, not the American Mastodon.]

3174 *PMPJ* 2 Pt. 1 (1805): 158. Brown's paper on Kentucky caves first appeared in *Trans. Amer. Philos. Soc.* 6 (1804–1806): 235. [Perhaps the fossil extinct Flat-headed Peccary, *Platygonus compressus*.]

3175 Rice, *op. cit.*, 615.

3176 Barton, *Discourse*, 20.

3177 "Gigantic Bos" *Bootherium bombifrons* Harlan, 1825, the extinct Woodland Muskox. ZOOBANK.

3178 Toe bones of giant sloth, first believed to be claws of a carnivore [such as the sabertoth Simodon], illustrated in Green, *American Science*, 283; Simpson, "Paleontology," 154.

3179 Barton papers, APS.

Randolph's "gigantic Bos" [*Bootherium bomifrons*] persisted in a recurrent query. Barton had asked Richard P. Barton in Virginia in 1808 to remember "big bones".[3180]

> ***Quere 10.*** *Make enquiry about big-bones. I am particularly anxious about the bones of a monstrous species of Buffaloe, of which I have seen the fossil horn from Tennassee. At all events enquire about big bones, big horns and the like.*

Richard had responded:

> *In Tennassee I procured no information about big bones &c. Those I enquired of knew nothing about such matters. But at Abington, I learnt that a person, residing in Withe, was in possession of some remarkably large teeth, found in a salt lick not far distant. I called on this person to see them, and procure them for you. He informed me that you had written to Genl. Preston respecting these bones; and that he had sent them on to the care of Mr. Granger, the post-Master General intending them for you; but that Mr. Granger, (he understood) forwarded them to Peale's museum. One of these teeth (a grinder) weighed 17¼ lbs.*[3181]

Also Randolph's "gigantic Bos" suggested a bison,[3182] and Barton was challenged to compare its skull with a living descendant. Small herds of bison then survived in the southeastern states from the times of Catesby, who left a curious drawing of the herbivore leaning against a tree trunk.[3183] William Byrd II had commented on the tongue and hump as particular delicacies that he had enjoyed in the uplands of Virginia. So Barton canvassed his correspondents for a "buffalo head," and Thomas Freeman, who had directed the Red River survey assisted by Peter Custis, obliged. Freeman had a thorough knowledge of the southern forests, canebrakes, and savannahs, and served as commissioner of public lands in what became Alabama. Freeman was in the earliest settlement of northern Alabama, named Twickenham after the seat of Alexander Pope on the Thames. The town became Huntsville in 1805. There Freeman met A. W. McGhee, who evidently was an acquaintance of Barton's. McGhee wrote from Mississippi Territory, 10 June 1813:

> *When I arrived in this place I met with your friend Maj. Freeman & mentioned to him your desire to possess the Skeleton of a Buffaloes head. He informed me that he could very readily procure one & that he would send it to you as soon as possible.*[3184]

The Newburgh mastodon exhibited in Peale's Museum, Jefferson on its board of directors, was the first fossil skeleton to be mounted in the United States and the second in the world. Peale had begun excavating the "bones of Mammoth" in 1801, two years after its discovery on the farm of John Masten in Orange County, New York.[3185] Most of the restoration was done by the son, Rembrandt Peale, using parts of the three exhumed skeletons to mount

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3180 See also our Chapter XIV, Biogeography, Humboldt, and Economic Botany.

3181 Richard P. Barton, 26 March 1808. Barton papers, APS.

3182 [The bison was also originally described as *Bos bison* by Linnaeus. MSW.]

3183 Catesby, *Natural History*, appendix, pl. 20. Frank Gilbert Roe's *North American Buffalo...*, ed. 2 (Toronto, 1970), 18–19, 234–240, has comprehensive early records and a folding map of historic range. Glover M. Allen, *Extinct and Vanishing Mammals of the Western Hemisphere* (Washington, D.C., 1942), 339.

3184 A. W. McGhee appears in *DAH* under Gutiérrez-McGee Expedition. He evidently died soon after his letter to Barton.

3185 Richardson, *Peale*, 84–85, illustration.

the exhibit in the southeast chamber of the Hall of the Philosophical Society. The missing bones to complete the skeleton were fashioned, not with plaster casts, but with workings in wood. It was Rembrandt Peale who in 1806 painted the "Exhumation of the Mastodon," celebrating what Sellers calls "America's first organized scientific expedition."[3186] Barton recorded a visit to view the exhibit:

> *April 1810—Old Mr. Peale informed me on the spot, that the only artificial bones in his mounted mammoth are the following, viz. the right femur, both of the tusks, in making which, however, he exactly followed the real tusks, one of which was found, and is still preserved in the museum; some of the toe bones.*[3187]

Barton was ever the opportunist, so when Winthrop Sargent offered to provide an account of the New Madrid earthquake of 16 December 1811, Barton responded affirmatively and added a postscript:

> *Cant you procure for me some Mammouth teeth, and other remains? They would be very acceptable to me. Command from me any return. Can you trace any particular range of mountains, running through our States, in connection with the Chikkasah Bluffs?*[3188]

Beyond the mammoth teeth was Barton's interest in other fossils. In the long questionnaire he sent his brother in Virginia was "Quere 11," which elicited a paragraph on the rich fossil deposits in the Nashville region. Barton's request that Winthrop Sargent follow up on the geology of the Chickasaw Bluffs prompted his larger question of the extent of limestone from the Mississippi River about Memphis to the piedmont of the mountains to the east. Barton's "Quere 11," and Richard Barton's answer:

> ***Quere 11.*** *Impressions of shells, plants, in slate, stone, coal &c. a very interesting subject to me. Ask about such things. The limestone of Tennassee, like that of this valley is everywhere impressed with shells. In and about Nashville are the largest impressions I have ever seen. Some large flat rocks in the town are so full that it would be difficult to lay a dollar down without touching some of these shells. Some of them are as large as a boy's hand. I saw no slate, and in one place only, free stone. Limestone abounds every where. The whole country is founded on horizontal strata of this stone. The superstructure is within from six or eight feet to within one foot of the surface. This structure forms the bottom of the creeks and smaller rivers, but the larger rivers, as the Cumberland & Tennessee have their bottoms formed of round pebbles, which have most probably, been washed down from the mountainous country.*
>
> *Fossil coal of a very fine quality has been discovered in two places on the East bank of the N. Fork of the Holston, five miles below, and some distance above the salt works* [in southwest corner of Virginia, King's salt works].[3189]

3186 Sellers, *Peale Biography*, 293–301 and pl. X.

3187 Barton papers, Miscellaneous notes, no. 1, APS.

3188 W. Sargent 9 March 1812. MHS. "Chickasaw bluffs" along the Mississippi River north to Memphis, an important ancient crossing place. See T. Nuttall, *A Journal of Travels into the Arkansas Territory during the Year 1819* (Philadelphia, 1821), 49 and 248, or the edition of Savoie Lottinville (Norman, 1980), especially fn. p. 58; M. C. Wilmarth, "Lexicon of geologic names of United States," *U.S. Geol. Surv. Bull.* 896 (1938): 425–426.

3189 Richard P. Barton, 26 March 1808. "Received April 24th 1808." Barton papers, APS.

In October 1814, Barton published *Archaeologiae Americanae* "to collect materials for a history of extinct animals and vegetables, the remains or impressions of which are daily discovered in the rapid progress of American population and improvement." Suffering poor health and over extended, he admitted it was "too late to attempt any very extensive and especially very *systematic* views" on the subject. He had gathered notes and hoped, in vain, to illustrate the account with "sometimes elegant drawings." Shark's teeth had been loaned to him from the Society's collection 30 October 1806 "To have drawings taken of them."[3190] His sixty-two pages of *Archaeologiae Americanae* comprised:

1. Facts, observations, and conjectures relative to elephantine bones found in North America in a letter to Cuvier (1805), published in 1806.[3191]
2. Additional facts to Cuvier (1806).
3. To Jefferson, concerning "Elephas Mastodontus and Elephas Primigenus," reprinted from National Intelligencer and Aurora, the text based on information in a letter from Tilesius. Barton concluded that both the Asiatic and American elephant belonged to the same genus.[3192]
4. A Shawanese Indian account of the discovery of five mammoth skeletons with flesh and the proposcis preserved. These had been found in the neighborhood of the Ohio River. The account of these animals had been given to John Bartram, who wrote an account for James Logan. The Indians had brought a large tooth and part of a tusk to Pittsburg. This account Barton had dated 17 September 1814.
5. A reprint of Reimarus's questions relative to the American elephantine bones, which had first appeared in Philadelphia Medical and Physical Journal in 1808.
6. Additional speculation on the period at which the mastodons and other elephants ceased to exist in America.

Barton ends with an unnumbered "fabricated" Indian tradition—some believed Gilbert White was influenced by Indian use of language, and made up a story that Barton discredits.

That may have stimulated Dr. Eustis of Columbia, Tennessee, to write Barton, who recorded, "I wrote him a letter concerning Megatherium, &c but kept no copy. Nov. 10, 1814."

Barton wrote 12 October 1814 to Professor Archibald Bruce in New York:

> *I this morning received the sheets of Cuvier's book, for which I am much ob*[lige]*d to you. I have already given the work a hasty perusal I shall read it again, and return it to you safe & sound with many thanks. I had been very anxious to see the work, as I have myself, for some time, been engaged in printing the first part of a trifle, which I shall call 'Archaeologiae Americanae Telluris Collecteana,' &c. I had received the last proofs of my essay before your kind attentions were to me. In a few days I will send you a copy of the work, which is not published but only printed for distribution among my friends. Of course I must beg you not to let it out of your hands,*

3190 APS "Minutes," 389. Catlett, *Guide*, 20, item. 71, for portfolios of drawings of *Lepidodendron*, etc.

3191 Greene, *American Science*, 289. For a table of chronology, 1695–1812, of "some discoveries and accounts of giant bones and teeth," see John C. Greene, *The Death of Adam: Evolution and Its Impact on Western Thought* (Ames, Iowa, 1959), 126–127.

3192 [Both were first recognized as *Elaphas* by Linnaeus, 1758. The Asian Elephant remains *Elaphas maximus*, while the African Elephant is now *Loxodonta africana* with *Loxodonta* segregated by Cuvier in 1825.]

> *until more of the work shall appear. Do you continue your Min. Journal? If you do, I have no objection to your saying that such a work has been printed. When I say it is a trifle, I speak of it as I think of it. Wishing you every happiness, I remain...*[3193]

What Friedrick Melsheimer of Hanover, Pennsylvania, meant to the beginnings of entomology in this country, Henry Steinhauer (1782-1818),[3194] of Bethlehem, Pennsylvania, proved for paleobotany, though his subjects were Old World species, bases for comparison. Born in South Wales in 1782, educated for the ministry in Yorkshire and Germany, he arrived in Pennsylvania in 1816 to superintend the Moravian Seminary. Two years later Steinhauer published in the *Transactions of the American Philosophical Society* on ten coal-age fossil "ferns." But Barton had written to Judge Davis in Boston on Carboniferous plants ten years before Steinhauer came to America:

> *I lately received from the Susquehanna a beautiful collection of impressions of ferns in states of different kinds. I intend to give it to the public (perhaps through the medium of our Philosophical Society) a memoir on these, and similar vestiges that have been found in America. The subject is undoubtedly, one of the most interesting nature in Natural History.*[3195]

The Barton collection at the American Philosophical Society includes unlabelled drawings in ink and watercolor, some measuring 15½ by 9¾ inches, of *Lepidodendron* and other fossil Lycopsida, intended certainly for Barton's unaccomplished "memoir." Pierre Turpin drew a pinnule of a pteridosperm in watercolor. Such *reliquiae* certainly represent early evidence of Barton's serious paleobotanical interest, though they did not reach publication.

Drake in 1816 remembered that Barton had unsuccessfully attempted to buy the fossil collection of Dr. William Goforth.[3196]

3193 Barton papers, APS. Cuvier, *Recherches*, is with Barton's books in Pennsylvania Hospital Library.

3194 Henry N. Andrews, *Fossil Hunters: in search of ancient plants* (Ithaca, 1980), 178-179. Daniel Steinhauer (1785-1852), whose brother was a correspondent of C. W. Short, was an early Ohio plant collector (R. L. Stuckey, *Bartonia* 36 (1967): 1-24).

3195 15 June 1806, HSP.

3196 John W. Frederick, "Daniel Drake," *Bartonia* 54 (1988): 83.

Chapter XXVI

Professor of the Theory and Practice of Medicine

For whatever reason, probably the need to increase his income because of the pressure of debts, Barton sought the position of Physician General of the United States Army and wrote to Jefferson at Monticello 23 March 1813 in support of his application, already filed with President Madison. He cited his qualifications as experience in medical practice, teaching experience of a "practical brand of medicine," and his having trained many young physicians. He assured Jefferson that "For a considerable time past my health has been good & firm and I could go through many of the fatigues of the station which I solicit."[3197] Jefferson could not but wonder whether Barton's health was that improved and why he would want to take time away from the completion of his Flora. Barton had assumed the burden of a loan to Priestley that Priestley, before his death in 1804, had not been able to repay, and it still haunted Barton. The heirs of Dr. Shippen had also been demanding for repayment of that loan.

Obligingly Jefferson complied with a letter to Madison, but wrote to Barton from Monticello, 3 April 1813:

> *Dear Sir*
>
> *Yours of the 23d Ult. has been duly received, and I shall place the subject of it before the President in a letter I am to write him immediately on another subject. nothing certainly can give me greater pleasure than to be useful to you on this and every other occasion. At the same time I am satisfied no stimulus can be wanting on the mind of the President. nobody better knows your qualifications for the office you desire, nor would be more disposed to do justice to them.*
>
> *When shall we have your book on American botany, and when the 1st volume of Lewis & Clark's travels? both of these works are of general expectation, and great interest, and to no one of more than to myself.*
>
> *Accept the assurance of my constant esteem and respect.*
>
> *Th. Jefferson*[3198]
>
> [Envelope:]
>
> *Milton, Va 7 AP1.*
>
> *free Th. Jefferson*

On another occasion Jefferson had written to President Madison from Monticello, 31 December 1811, that, contrary to his inclination, he sends application for office from persons it is difficult to refuse, but he wishes Madison to consider him only a post rider bearing these letters.[3199] Did he forward Barton's request with the same feeling? He was obviously disappointed that Barton would risk further delay of the publication of these works in progress, but he may have had little knowledge of the financial burdens, which in part contributed to the delays.

Before Madison could make any decision, on 19 April Benjamin Rush died of pneumonia. He had been attended by doctors Dorsey and Physick. Barton, so his nephew

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3197 *Bull. Bur. Rolls & Libr.* (Dept. of State, Washington, DC, 1894): 413.

3198 Barton papers, APS.

3199 *Bull. Bur. Rolls & Libr.* (Dept. of State, Washington, DC, 1894): 412.

William P. C. Barton wrote, had long coveted the honor that went with Rush's position, and so he applied for, and received the appointment. In a letter to the Trustees of the University, of which only his rough notes are among his papers, Barton listed what amounted to an inventory of his teaching. Materia medica and botany were certainly Barton's fields, the Chair of the Theory and Practice of Medicine was less compatible to his interests, though he may not have agreed. He had a strong desire to counteract ideas Rush had been teaching, and which he held to be in error. Was it merely, as nephew William wrote, that Barton's "emotions could not but stimulate him to more vigorous and continued exertions to equal [Rush's] fame"? Barton had his own theories to put forth, and there were the prestige and increased emoluments that came with the position.

Barton was perhaps not so confident of success, since death had taken away some of the university officials who had early favored him: David Rittenhouse, Reverend Andrews, for examples. A fragment survives, though undated, among his miscellaneous papers:

> *...In suffering, that under the direction of the present trustees of the university, such changes may yet take place: in the meanwhile, I shall not despond, if I continue to receive only the same degree of encouragement and patronage that I have hitherto received. My principal patrons have been the students of medicine; and of late numbers of the respectable members of the clergy. under such auspices, the science cannot fail to grow, and in time to assume a most respectable position among the studies that are taught in this school.*[3200]

His undated rough original of his 1813 letter to the Trustees of the University of Pennsylvania Medical School (Figure 21) reads:

> *Gentlemen,*
>
> *Twenty-three years have now elapsed since I first had the honour of receiving from the Trustees of the College of Philadelphia the appointment of a public teacher in this city. During this period I have delivered 20 courses of lectures in Botany, 18 in Zoology; and 17 on Materia Medica. Though much of the period which I have mentioned has been passed in sickness and poverty and in penury, I still look back upon my labours with some degree of satisfaction. I have seen the rise and progress of a favorite science among us. I have flattered myself that I have been somewhat instrumental in its growth. And although I am now necessarily, by other labours, in a great measure withdrawn from its pursuits, It is impossible for me to forget its charms: and I fondly indulge a hope, that I may pass the last years of my life under the shade of that tree, which I have assisted in planting, in the further prosecution of those studies not less useful than delightful, which of all have been the source of the largest portion of my happiness in life.*
>
> *In taking* [missing page?]*...I now enter upon a new career of duties. By the death of Dr. Rush the quantity of my labours, and the importance of my duties as a teacher in this University have been greatly increased. I have been called upon by the guardians of the University, to teach the Institutes of Medicine & the practice of Physic, and Clinical Medicine: to teach these important branches of medicine, which had long been taught by my deceased colleague.*[3201]

3200 Barton papers, APS.

3201 Barton papers, APS.

John A. Casey, who had won his medical degree in 1804, wrote his congratulations and good wishes along with several treatments under way.

> *Augusta, September 1, 1813*
>
> *Dear Sir*
>
> *While I regret the great loss the Materia Medica Chair has sustained in the resignation of its Occupien, filled with so much honor to himself and such manifest advantages to those who attended, I cannot but offer my congratulations at the 'sero quam nun quam' tribute of merit the trustees of the University of Philadelphia have conferred. I hope Sir those severe visitations of gout that harassed you in 1801 & 1803-4 when I attended your lectures have yielded in a measure if not entirely to your strict regimen and to time, and that in dispensing the doctrine of the healing art your room will be crowded with admiring audience. Two young Gentlemen of my Shop will listen to you the ensuing winter. If I can conveniently leave my professional duties and my family during the present season I will again do myself the pleasure of renewing our acquaintance. Indeed I shall make a great exertion to undertake such a journey as I wish to see Dr. Physic and be benefitted by his surgical services...*
>
> *Accept Sir the assurances of my great delight at the intelligence of your filling the seat in the Philadelphia University of the Institutes and Practice of Physic, and my good wishes for a continuance of health to discharge its functions. With great regard, Your* [illeg.]
>
> *John A. Casey*[3202]

Some months later Casey expressed concern for affairs as they now appeared, to Dr. L. Kollack in Savannah 5 January 1814:

> *The death of Dr. Rush has deranged the department considerably. The chair of Materia Medica filled so ably by Doct. Barton has fallen into hands not intended by nature to adorn it. Dr. Chapman unites to great merit and considerable talents, great acquirements and no want of ambition but he was not prepared to enter into the elaborate detail of orders, genera, & species of the Botanical names &c. of the Materia Medica...he has much curtailed and simplified the plan of his Predecessor...his being inducted almost by surprise into the department, he has acquitted himself highly to his credit. Had Barton contented himself with that Theatre on which he was formed to shine (for Parades ad omnis is not the common faculty of Man)...Dr. Barton having always been the subject of gouty affections, or many paroxisms whereof his life was suspended on a thread, had, I presume scarcely thought of surviving Dr. Rush and had made no calculations on supplying the seat. His appointment found him without arrangement, without even a plan or a course...his opposition to and enmity to Dr. Rush...nosology and opinions of Dr. Cullen are again resusitated like a Phoenix from the ashes of his greatest foe, for no man labored more to decry the Edinburgh Professor than Dr. Rush... The bust of the Venerable deceased adorns one of the Lecture rooms and serves to arouse a vibration of resentment when the opinions of Rush are handled*

3202 Barton papers, APS.

with disrespect. Indeed the Professors have found it prudent to touch lightly when commenting on his doctrines...[3203]

Muhlenberg wrote William Baldwin 18 November 1813:

Dr. Barton, you know is now in the place of the excellent deceased Benjamin Rush. Whether his new situation will hurt his botanical pursuits, time will show.[3204]

William P. C. Barton wrote of this "man of high ambition," his Uncle Benjamin, on his accession to the Chair, that:

It was his intention, had he lived, to resign [the Chair of Natural History and Botany] *perhaps about this time. He believed that the duties of a lecturer on natural history and botany required all the fires, the zeal, and bodily and laborious exertions of a young man. The energy and fervour he had once shown in teaching those branches, he believed himself no longer capable of, neither did he wish to substitute for the necessary perambulatory excursions with his botanical class (which had always been frequent) the tame and uninstructive lectures of an old, and, what is an inevitable consequence, of a closet teacher...He had been an eminent teacher of those sciences, because he was young and active—when he became older he was unwilling to detract from his well-earned reputation...He had determined to devote the remainder of his life to the more important chair to which he had succeeded.*[3205]

One of Rush's and Barton's more distinguished pupils, J. P. Mittauer, practicing in Prince Edward, Virginia, gave his estimate of Barton's move on 21 February 1814 to John Warfield, the letter addressed to Raines Tavern, Pennsylvania:

...The revolution which has been effected in the University by the death of Dr. Rush, is a very important one & will no doubt produce very great changes & modifications as well in the matter of arrangement & lecturing as in medical opinion. Barton who it seems is Rush's successor I am sure will not follow the arrangement or support the opinion of Dr. Rush, nor indeed can he ever deliver so complete & practical course of lectures. Rush had many foibles both as a man & as a physician, but he was the ablest practitioner & the most minute observer in medical matters that his country ever has produced, notwithstanding all his faults; he would not only explain the hidden nature of disease theoretically considered, but would pour forth an inexhaustible torrent of Therapeutics drawn from actual observations & that too directed by the most perservering sagacity. He was also candid ingenious & communicative on all subjects. His peculiar talent for observation particularly in medical matters I am satisfied never can be equalled by Dr. Barton. Dr. B. is nevertheless a profound & very learned physician more able in abstract than Clinical practice, tho by no means a minute observer of the phenomena of disease—on my opinion he wants decision & promptitude as well as dispatch in practice he is too indolent & inattentive ever to be a great observer of phenomena of

3203 Kollock 469: 56. Georgia Historical Society.
3204 Darlington, *Baldwin*, 114.
3205 Barton, *Elements* (1836), 21-22.

> *disease—as an abstract practitioner I am satisfied he is able, & I know very instructive. he always reminded me when in a sick room, as a young man who had studied medicine thoroughly without ever seeing a patient—his practical rules I have no hesitation in pronouncing, will be good, but he never can qualify them, with the strong & forcible expression—They are the result of my own experience & observation during a long practice on all occasions—Chapman I know will fill his chair with great ability. under the guidance of such a man, I am sure Materia Medica will flourish...*[3206]

Although Nathaniel Chapman,[3207] thirty-three years old, "of delightful personality, sparkling with wit," had been ill-prepared to assume the Chair of Materia Medica (Barton held on to the position as adviser) he acquired proficiency, adding more chemistry to his presentation. He had attended Barton's lectures in 1798 and 1799; he had practiced obstetrics; and he had become an assistant to Dr. James. In 1816 Chapman succeeded to the Chair of the Theory and Practice of Medicine. He published on *Discourses on the Elements of Therapeutics and Materia Medica* (Philadelphia, 1817–1819) and *A Compendium of Lectures on the Theory and Practice of Medicine* (Philadelphia, 1846). Charles Wilkins Short on his arrival in Philadelphia from Kentucky wrote his brother 15 April 1814 that he was considering study under Dr. Chapman, whose reputation he had found highly regarded:

> *...my intention was to become a student of Dr. Chapman a physician of the first eminence in this place, and as entirely an accomplished gentleman as he is eminent in his profession—with him I hope to make great progress in my studies...Dr. C. has an excellent library, nearly all of his works are the best British editions, and the rarest and most exquisite anatomical engravings.*[3208]

Short, however, finally became Wistar's pupil.

Barton had held the Chair of Materia Medica with what Dr. J. B. Biddle called "distinguished eclat," but the Chair of the Theory and Practice of Medicine "was congenial neither to his taste nor studies."[3209]

From William Barton in Lancaster came good wishes:

> *31 July 1813*
>
> *Dear Brother*
>
> *I congratulate you, very sincerely, on your appointment created by the death of D. Rush; and hope you to continue to hold the Botanical Chair, at least, in conjunction with them—if so, I presume the whole will produce to you nearly $9,000 per annum. I have handed to W*[illiam] *Hamilton* [of Lancaster] *the Notice of this Appointment, for his tomorrow's paper; it will appear in the others, in course.*[3210]

The congratulations of former pupil Dr. Jarvis Roebuck, written 20 December 1815 from Santa Cruz Island, came too late for Barton's appreciation, but contained a noteworthy comment on Rush's career:

3206 Perkins Library, Duke University.

3207 Carson, *History*, 172–179; Corner, *Two Centuries*, 66–67; Richman, *Chapman*, especially 66–69; Charles H. LaWall in *DAB*.

3208 Filson Club, Louisville, Kentucky.

3209 Gross, *Lives*, 673.

3210 Barton papers, APS.

> *"I congratulate you, on your late appointment to the Chair of the Practice of medicine, you were entitled–& I trust much benefit will arise from the retirement of those Speculative doctrines which detracted from the very great merit of the late very eminent Professor! He was an ornament to the Profession, but I fear his Ambition, of being the head of a Medical clack–& his unrestrained Imagination, have operated–in his didactic operations–injuring the medical practice in America.*[3211]

Among other candidates for the position of Theory and Practice of Medicine had been William Currie who had participated in the newspaper attacks on Rush during the yellow fever epidemic of 1797. Currie outlined his qualifications in his letter of 6 May 1813 to William Tilgham, Chief Justice of the Commonwealth. Unsuccessful in his bid from Barton's having succeeded to the position, Currie tried again after Barton's death, but again was by-passed.[3212]

Rush, despite his diminished reputation among some of the faculty, still was held high in popular opinion. Barton had always had a modest practice because of his devotion to natural history, was more cautious, and perhaps was just as successful a physician so far as alleviating pain and "curing" his patients. His skill was in the teaching of natural history and botany, and materia medica. His health was precarious, his having recently suffered attacks of gout and "haemoptisis" or tuberculosis. Pride and ambition, and the desire for increased income, carried him on to accept a position he could not adequately fill. A concerned note from Chapman 5 March 1815, shortly before Barton's departure for Europe read: "faculty meet at 11 o'clock tomorrow (room is well warmed) & proceed with the examinations." He is sending dissertation of the candidate, "but if Your health is not admitting your attending please give it to another prof."[3213]

Barton began notes for his opening address to his pupils in Theory and Practice, "Though I am no longer the professor of materia medica..." Then he began again:

> *It is necessary that I should now say something concerning the books which it is necessary that you should peruse, with attention or at least very frequently consult, as companions to my course of lectures. These are chiefly the following: viz.*
>
> *1. Dr. Cullen's First Series of the Practice of Physic, a new edition which is now printing by Mr. Dobson* [edited by Barton, Philadelphia] *and the Whole of which will be completed long before the conclusion of our course of lectures. This edition contains a large body of notes. As to the original work its value is incalculable. No man can pretend to a knowledge of disease; no student can pass the ordeal of an examination before the medical professors who has* [not] *studied with sedulous attention, this inestimable performance of one of the greatest medical men the world has yet produced Haller would have called it 'opus pure aureum'*
>
> *2. Though I am no longer the professor of materia medica, let me recommend to your perusal, or frequent consultation, the same author's 'treatise of the materia medica.' It is a work of great value; in my mind indispensibly necessary to the student of this branch of medicine. In the therapeutic part of my course, it will be my chiefest manual and guide. None of you will outlive the reputation of this work, an edition of which,*

3211 Barton papers, APS.

3212 Carson papers 3: 7 and 45, CPSP. The copy of Currie's tract *A Dissertation on the Autumnal Remitting Fever* (Philadelphia, 1798), (Austin, *Imprints*, no. 598) at the APS carries Barton's signature. Currie died in Philadelphia aged 69. *Hist. Cat. St. Andrews Soc.* (Philadelphia, 1907), 157–159.

3213 Barton papers, APS.

with large additions adapted to the state of medical science in this country, has been published by Messrs Parker of this city.

3. In accompanying through the physiological department of my course you will stand in need of a manual or guide. There are two books, one or both of which I recommend to your attention. These are Blumenbach's Elements of Physiology[3214] *and the larger work of* [Prichard?].[3215] *The student of Physiology still desiderates a truly valuable and not too extensive text book of this beautiful science. Until something better makes its appearance.*

There his notes for the lecture end. When in the spring of 1814 Barton finished his first term of lectures in Theory and Practice (Figure 22) he appealed to his pupils "to make every allowance for the irregularities & defects of a series of lectures upon subjects so important, so extensive, & so difficult, as those which it has been my province to treat of." He concluded:

To my class generaly, to each of you <u>individually</u> I tender my respect & affection I can proceed no further I pray God to bless you; to keep you in go[o]d health; to continue to instruct your minds with knowledge, & your hearts with benevolence & amenity, that you may thus be rendered eminently useful—as professors of the healing art—Adieu.

Then the following year in his medical address, undated but apparently in April:

I say not these things in the language and feelings of timidity and supplication. Your predelections have raised me from poverty and distress to something like independence.

But gentlemen, we must part Farewell, may health & prosperity, happiness and fame be your portion, wherever you may be placed My greatest ambition is to be remembered by you, as your preceptor & your friend.[3216]

Barton, according to W. P. C. Barton, delivered two courses of lectures in Theory and Practice before he left for Europe. The nephew described his uncle in April 1816, in part:

As a medical teacher, he was eloquent, instructive, and when occasion called for it, quite pathetic. His voice was good, though attenuated, penetrating, and sometimes rather sharp—his enunciation clear and distinct—his pronunciation constrained, and his emphasis, owing to his remarkable kind of punctuation, and a desire to be perspicuously understood, was studied, forced, and often inappropriate. In his lectures, his diction was cacophonous and unpleasant.[3217]

If he seems to have contradicted himself in his description, it was because his eulogy was given before an audience of medical men composed of both friends and foes of the deceased.

3214 Barton's copy of the German edition, *Institutiones Physiologicae* (Göttingen, 1786), is at APS. Caldwell edited a new edition in 1795!

3215 Is this James Cowles Prichard's (1786–1848) *Researches into the Physical History of Man* (London, 1813), copy in LCP?

3216 Barton papers, APS.

3217 W. P. C. Barton's eulogy given before the Medical Society in April 1816, and printed in *Port Folio* 1 (1816); this quote, p. 285; and in *Elements* (1836).

His full appreciation of his uncle is given in the first twenty pages of the 1836 edition of Barton's *Elements*.

Chapter XXVII

Barton's Favored Pupils

There were two who listened to Barton's lectures while attending the medical school, there at the requests of special friends, President Thomas Jefferson and William Bartram. Jefferson had written 24 August 1808 to Peale that Thomas Jefferson Randolph would be attending "lectures in those branches of science which cannot be so advantageously taught anywhere else in America." There would be a $20 fee for anatomy lectures given by Dr. Wistar "with benefit of actual dissections," and a $10 fee for surgery, and commencing in April Barton's natural history with botany "aided by Mr. Hamilton's Garden," the lecture fee $12. Then on 12 October Jefferson wrote to Barton from Washington:

> *Washington, Oct. 12 08.*
>
> *Dear Sir*
>
> *This will be handed you by my grandson Th: Jefferson Randolph who goes on to take the benefit of your lectures in Natural history in the first instance, & of those of Anatomy & Surgery. It is proposed that the two former shall occupy his attention almost exclusively, his attendance on the lectures in Surgery being merely with a view to the situation of the head of a family in the country where surgeons are not to be had, & the want of them frequent. it will then be of service to him to have been initiated into the outlines of the science & to have seen examples in the practice which he may recollect & imitate when placed under that necessity. in the spring he will atend your botanical course. his natural turn is very strongly to the objects of your two courses of lectures, and I hope you will have reason to be contented with his capacity & character. in recommending him to your good offices, I do not mean those which would lead him into company. this is not among our objects and would too possibly interfere with those designated for him. any particular aid you can be so kind as to give him in these will lay us all under obligations in a case very interesting to our feelings & happiness. I salute you with great friendship & respect.*
>
> *Th: Jefferson*
>
> [Barton:]
>
> *Received Oct. 22d, 1808.*[3218]

The next day he wrote Wistar to solicit Peale's taking in Randolph as a boarder, and Peale accepted. That same day Jefferson wrote his grandson:

> *I have lodged, and shall from time to time remit to Mr. Peale, money for your board, washing, fire, candles, and tickets for the lectures. You should buy a copy of John and Charles Bell's Anatomy as soon as you arrive that you may use it while attending lectures in anatomy. It is in 4 vols. 8 vo. and Mr. Peale will pay for it. Enter yourself for the lectures in Anatomy, Natural History and Surgery all of which begin in November,*

3218 Barton papers, APS. On T. J. Randolph, T. P. Abernathy in *DAB*.

and end in March. Mr. Peale will pay for the tickets amounting to 42 Dollars. The Botanical course does not begin till April. then you must buy a Copy of Dr. Barton's botany, new edition.[3219]

On the fourteenth Jefferson requested a Mr. Duane to obtain a copy of Barton's *Elements* for him, perhaps for Randolph's use. Randolph, Jefferson's favorite grandson, whom he had encouraged to gain a liberal education, "to cultivate good humor and good manners," returned to Monticello, and in 1814 assumed the management of his grandfather's estate.

The close friendship of William Bartram with B. S. Barton led to the lending and gifts of books, books sometimes recompense for the information and drawings that Bartram supplied for Barton's several projects. On 16 July 1800 William wrote "received Your valuable present, with thanks. Jimmy is delighted with the Book Thee sends him, & returns thanks for the pleasing obligation thou has him under; he will attend to thy requisitions, in every particular[.] Wishing thee health" etc., and "Come see us as soon as convenient." It is not difficult to guess the sort of requisition Barton had asked of James Howell Bartram, born 24 November 1783 to John Bartram, Jr. James began a medical apprenticeship with Dr. Barton in 1801. William had written 13 July:

My Worthy Friend.

I know you will excuse my recommending to your Favour and protection my Nephew James, notwithstanding Your repeated declarations & most kind & generous offers.—You are my D[ea]*r friend now his Parent, guardean & Master,*

There is no other Man that I should chuse or trust to for his Preceptor...My regards to your worthy Lady.

Early in August Bartram wrote:

My D[ea]*r Friend. The*[e] *obligest us all, in bestowing attention & favour to the Young Man. Jamme. I pray that he may endeavour to deserve it.*

Barton reported 23 August on James's progress:

I am happy to inform you & your brother, that James is extremely assiduous, and makes very great progress in his studies. I can, with most sincere truth, say, that our young friend bids fair to make a great figure in life. Every thing that I can do for him shall be done. My compliments to your brother. Believe me to be your affectionate friend, &c.

B. S. Barton.[3220]

William answered the same day, "You are good to Jamme, I wish he may be of service to Thee to repay in some part your friendship and paternal care to him."[3221] Much of Jamme's story is missing, for on 24 October 1801 Barton assured William, "My opinion of James is in no way altered. He is a young man of great merit. He will be an honor to me, & I hope a blessing to his family. God bless you. B.S.B."[3222] James attended Rush's class of 1802, and perhaps continued with Barton, but he received no degree, and in 1804 his knowledge

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3219 Betts & Bear, *Jefferson Letters*, 350–351. Both John and Charles Bell are in *DAB*.

3220 Barton papers, APS.

3221 Barton papers, APS.

3222 Barton papers, APS.

considered sufficient, he sailed as ship's surgeon on the *George Washington*, returning in 1805.

Barton's graduates, like the pupils of Linnaeus who went to the ends of the Earth communicating news and *naturalia* to their preceptor, put up their shingles over the wide reaches of the new nation. Felix Robertson of Nashville, expedited Barton's queries on the life history of paroquets: "There is one species only," his wife wrote for him in 1805, "and they are present at all times of the year."[3223]

John Beatty, writing from Ohio, asked for American Columbo root (*Frasera carolinensis*) and seeds which, cut in transverse sections ¾-inch thick, he might compare with the local product.[3224]

Some other former students from the frontier regaled Barton with bits of news as they requested needed medicine and vaccines. One enclosed $50 for supplies; another requested that he order books from John Conrad & Company for a pupil, another a copy of Barton's own *Elements* for himself. William T. Morris, who left without a degree, had borrowed money from Barton while he was a pupil, and complained of too many practitioners in Sunbury where he had attempted a practice, and of having to compete with a "Dutch Quack." Would his "dear friend" suggest his moving to another part of the country? In his last letter, which Barton preserved, he protested his benefactor's impatience at the repayment of his loan, "No, Dr. Barton, I am not dishonest–I am poor."[3225] What really were his problems? More than poverty?

After his graduation, M.D. 1800, Dr. Joseph Glover wrote to Barton from Charleston, South Carolina, on the ill effects of mercury, published at Barton's suggestion in *Medical Repository*.[3226] He especially wished to introduce two promising pupils who wished to come for lectures. They, however, like so many of the candidates recommended to Barton in letters, did not stay to complete the degree. Glover included news of his classmate, Edward Darrel Smith, who planned to move from Charleston to a plantation. He reported two years later that Smith had settled 240 miles away in the Pendleton district. He also wrote that the number of deaths from consumption had increased in Charleston.

Smith himself wrote from Charleston in 1801 that:

> *The gratification of one letter from you had made me covetous of more...My only plea is a sincere, disinterested friendship. Perhaps too I resemble the rest of Mankind in this particular, that having once tasted of a pleasure they eagerly desire a repetition, however conscious of the weakness of their claims. Let the motive be what it will, I shall always esteem it a singular favour to receive a few lines.*

He then proceeded to address the problem about which Barton had probably initiated the correspondence:

> *I perceive that you have issued proposals for publishing a new work, entitled the Elements of Botany. It is much to be regretted that this undertaking has so few supporters here, & that where Fortune has bestowed an abundance of her favours, there should be such a dearth of Literary Taste. Indigence is too often the attendant of Genius, while Wealth fills the coffers of those, whose ideas extend no further than the*

3223 Mrs. F. Robertson, Barton correspondence, HSP.

3224 Barton papers, APS. Nuttall, *Genera*, 105, says this is a tonic in no way inferior to *Gentiana lutea*.

3225 Barton papers, APS. There are letters 23 June, 5 August, 24 Nov. 1806; 20 Feb., 19 or 29 April, 6 May 1807; and 28 July 1809.

3226 *Med. Repos.* 6 (1803): 241.

objects which surround them—In this Country there are many persons possessed of a superfluity of Riches, who do not take one step to promote the interests of Science; whereas were they influenced with a laudable zeal for the advancement of Knowledge, their exertions would render many latent talents & rescue languishing Merit from a state of inglorious Despondence. Wealth is the Herald to Fame, & he, who possesses an abundant stock, will travel fast on the road to public Notice—We must hope for a change of public opinion on this subject, or the new Man of Merit may live in obscurity—I flatter myself however that the encouragement in other places has been such as to induce you to persevere in your intentions. It has long been my wish to make some acquaintance with the science of Botany, but I have been totally at a loss what Elementary Work to select—Now there is a prospect of my wishes being gratified, & this I hope will be the case before many months are elapsed—.

My friend Gough has been residing on a Sea Island (6 miles from the city, the whole summer, & is afraid to return to it until there be fewer traces of disease. He has had a considerable portion of business among the people, who lived on the island, with my best to Mrs. B.[3227]

Smith had touched on the problem that was to plague Barton's aspirations: the lack of interest for works on natural history among so many who had prospered in the New World.

Some of the reports from his former pupils Barton published in his *Philadelphia Medical and Physical Journal*; for example, Dr. Thomas Walmsley's letter of 12 January 1805, on the use of basswood, "by no means rare in vicinity of [Chambersburg, Pennsylvania]. [*Tilia*] often reaches the height of forty or fifty feet and there are several of two feet in diameter." As was his custom Barton added his own notes.[3228]

Peter Custis of Accomac County, Virginia, after two years of attending Barton's lectures on natural history and materia medica, was finally chosen by Thomas Freeman and Barton, and approved by Jefferson, to accompany Freeman as naturalist on the Red River Expedition of 1806. This survey was one of several planned by Jefferson to learn the topography and boundaries of his Louisiana Purchase. Only this, and the Lewis and Clark Expedition, were carried out before Jefferson was voted out of office. The Freeman-Custis Expedition had been largely forgotten, because it had been halted by the opposition of the Spanish and the hostility of the Osage Indians, until the botanist Conrad Morton[3229] reported on the plant collections, and recently historian Dan L. Flores detailed its activities.[3230] Both Jefferson and Barton tried to persuade William Bartram to join, and Barton wrote to him 30 November 1805:

My dear friend;

What do you say to a voyage or journey up the Red-River, one of the western branches of the Mississippi. A new expedition for exploring the waters of that river, particularly with a view to its Botanical and Zoological productions, is about to take place under the patronage of the president of the United States. Your name has been particularly mentioned, by the president, Mr. Freeman, who is now in Philadelphia, is particularly charged with the business of enquiring what other persons are suitable for such an object. Send your answer by my boy. I am not authorized to say what will

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3227 Barton papers, APS.

3228 *PMPJ* 1 (1805) Pt. 2: 34–37. Walmsley had been one of Barton's favorite pupils, for whom he published an appreciative eulogy in *PMPJ* 2 (1806) Pt. 2: 162–167.

3229 Conrad Morton, "Freeman and Custis account of the Red River Expedition of 1806," *J. Arnold Arbor.* 48 (1967): 431–451.

3230 Flores, *Custis.*

be the compensation, But I doubt not it will be liberal, particularly if one so well known and so justly esteemed as you are, will engage in the tour.

The journey will not be fatiguing. Mr. Freeman tells me, that a great part of it will be by water, and that if you should wish to return next fall, permission will be obtained.

I think I can promise that, should you go, a sum of money, not less than 600 dollars, besides the governmental compensation, will be raised by your friends of science here.

Come on. You are not too old. You have sufficient youth, health, and strength for the journey. You will render great and new service to Natural Science. Remember, that your venerable father, continued to make Botanical tours, long after he had reached your age. If you think it probable that you will go, I will either call to see you (tomorrow) with Mr. Freeman or I will give him a line of introduction to you; or I will send out my chair for you to come to town.

How sincerely do I wish that it were possible for me to visit the Red-River! But I am detained by indispensable duties; by my profession, by my lectures, by my wife and children. Ever affectionately, Yours, &c. B. S. Barton.[3231]

This was such a trip as Barton in his younger years would have welcomed eagerly. Bartram responded:

My Worthy Friend

You have agreeably surprised me with The proposal of a Journey up the Red River in Louisiana.

If as you say under the patronage of the President of the United States, I think I could undertake it in the department of Botanical researches, & other branches of Natural history. You are a proper Judge of my qualifications, if I should go, my best endeavours will be expected for the advancement of Science, & to please the President, Mr. Jefferson.

Could you make it convenient to come here tomorrow & bring Mr. Freeman with you. It is likely for to be a pleasant day. I think if the Plann of the Expedition is such that a person of my age could be likely to perform I willin[g]ly conscent to it.

My Dr friend I return with thanks the Book of Specimins, with my observations on them, & should be glad to have your Opinion. With every sense of Regard & Esteem Yours

Willm. Bartram

Kingsess Novembr. 30th 1805[3232]

Evidently after consultation with Freeman, Bartram decided the journey would be too much for him—he was not robust. Back in 1804 Rafinesque had proposed to Jefferson that if he ever wished a botanist to accompany any of the planned expeditions he would be highly honored if selected. Now Jefferson offered him the position, but Jefferson's letter of appointment failed to reach Rafinesque before he departed for Europe.[3233] The choice then rested on Barton's pupil, Peter Custis.

3231 Barton papers, APS. His copy.

3232 Barton papers, APS.

3233 Flores, *Custis*, 57.

The expedition, after numerous delays, set out from Fort Adams on the lower Mississippi in early April 1806, and reached present Red River County, Texas. Custis's observations are an important description of southeastern trans-Mississippi ecology since he was the first trained naturalist to leave a record. On the return Custis wrote from Natchitoches 1 June 1806 a detailed letter with an included meteorological chart, the letter received by Barton 4 August. Barton immediately published the letter with a folding chart.[3234] It covered even a little more fully the material of that date in Custis's journal, which was published by Flores.

At a meeting of the Philadelphia Linnaean Society in June of 1807 Barton announced that "My pupil Dr. Peter Custis, of Virginia, had observed near the Red river, a new and singular species of *Proteus*,...being furnished with four legs," a salamander, one of the most significant animals observed.[3235] Although Custis had used names found in Marshall's *Arbustum Americanum* and Walter, *Flora Caroliniana*, he seemed unaware of Michaux's *Flora*. Probably the only botany book he was able to crowd in for the trip was the Murray edition of Linnaeus's *Systema Vegetabilium*, ed. 13 (Göttingen & Gotha, 1774). Had Barton permitted Custis to take the *Systema* with him as he loaned his copy of Du Pratz's *The History of Louisiana* (London, 1774) to Lewis for the trip to the Columbia River? The *Systema*, in Latin, with descriptions of four or five words of all the world's known plants, must have been a discouraging aid. Since most of the plants were new species, Custis's difficulties in naming his specimens may be imagined. He named an *Orobanche* "Bartonia bracteata"[3236] for his professor, but the name apparently was missed by Barton. Some of the plant specimens were lost, but some reached Barton. *Veronicastrum virginicum*,[3237] for example, is labeled in Barton's hand as from "about 450 miles up the Red River in a large prairie M. Custis," the phrase likely copied from Custis's label. Pursh failed to notice Custis's collections in his *Flora*, although he examined and annotated the specimens. He probably was not able to take snippets for study in England, as he did from the Lewis and Clark specimens. One specimen, "Chironia? au genus distinctum?" labeled by Pursh, was the first collection of a beautiful species, the Prarie Gentian, now known as *Eustoma grandiflorum* (Raf.) Shinners.[3238] It was later collected by Nuttall in 1819, who labeled it "Salt River Arkansas," and proposed it as a new genus on the label, but left the name in manuscript.

On his return Custis re-entered the medical school and enrolled again in Barton's classes for the winter of 1806–1807, taking his degree the following spring. His profession engrossed his later life, leaving little time for botany. He set up practice in Drummond Town, Accomack County, Virginia, on the Delaware Peninsula, from where on 21 May 1807 he wrote to Barton:

> *Dear sir,*
>
> *A vacancy having occurred at Onancoek Town, a few miles from this, my friends were solicitous that I should occupy that place, and I have determined to yield to their solicitations. How long I shall remain there I do not know. My prospects will be tolerably flattering, yet my ambition would direct me where they would be much greater so in a pecuniary point*

3234 *PMPJ* 2 (1806) Pt. 2: 43–50. This pioneer record was overlooked in Ewan, "Louisiana Bibliography," 7; and Eric Sundell in his Supplement, *Tulane Stud. Zool. Bot.* 29 (1979), no. 1.

3235 Barton, *Discourse* (1807), 23. *An Account of the Red River in Louisiana, drawn up from the returns of Messrs. Freeman and Custis, To the War Office of the United States, who explored the same in the year 1806* was published anonymously, 63 pp. with 2 folding tables. See Flores, *Custis*, 94, 295: Nicholas King redacted the manuscript by Freeman and Custis; Jackson, *Letters*, ed. 2, 2: 755, cites this as Thomas Freeman and Peter Custis.

3236 [*Bartonia bracteata* Custis, *Account Red River* 55. 1807. This refers to *Mentzelia decapetala* in the Loasaceae. IPNI.]

3237 [Culver's Root. ITIS.]

3238 Morton missed this species in his catalog of Custis's collections. Lloyd Shinners, *Southw. Naturalist* 2 (1957): 41, correctly understood the nomenclature of this plant of late summer, growing also in saline soils westward to the plains about Denver. Flores, *Custis* [p. 246], illustr., the herbarium sheet at ANSP.

of view,—As yet I have had little opportunity to attend to the objects of your enquiry, but shall not omit them.—The Tillandsia Usneaoides [usneoides], I believe will be found on this Peninsula as high as the Maryland-line, perhaps higher.—A Gentleman informs me he has seen it within a few miles of the line.—I have seen it above this place myself. I am also informed by a Gent. from Northampton that he has seen some small trees of the live-oak [Quercus virginiana] in that country on the Sea-bord; but I believe it has not been found as high as Accomac.—The Spiraea tomentosa is abundant here. I will send you specimens of all our plants as soon as a I can make the collections.—

...I would esteem it a particular favor if you could inclose me some Vaccine Virus by the first mail.—Receive the assurances of my perfect esteem, and my ardent wish for the restoration and long continuance of your health, that you may be enabled to prosecute those important branches of science which you so ably cultivate.—Make my best respects to Mrs. Barton and tell her I had the pleasure to meet Miss Nesbit in Baltimore.

Yr. Sincere Friend & Pupil
Peter Custis[3239]

Barton indicated "answered" on Custis's letter, but without date. Today a Virginia collection of the Mountain Camellia *Stewartia ovata* Weatherby, labeled as "no. 8" in Barton's hand, testifies to Custis's effort, but other of his Virginia trophies have been lost from the Barton herbarium.

Dr. Frederic Seip of Natchez, a former pupil, raised an interesting ichthyological question: "What was the fish Mr. Custis mentioned"? Perhaps it was the Alligator gar,[3240] noted by Charles Alexander Lesueur who later traversed the Mississippi planning his work on American fishes. Seip's letter addressed to Barton, 16 May 1803, on Arch Street reads:

Dear Sir

Your favor of March 7th came to hand last mail. In reply I can only say that it will afford me extreme pleasure to procure every information that lies in my power on the subject you wish, & you may rely on it Sir I will forward some specimens likewise, the waters of the Mississippi being now at their height will preclude the possibility for a few weeks but will immediately make every effort to obtain them on their subsiding. Dr. Towles who lives at Point Coupee was present at the receipt of yours, to whom I communicated your desire, & has volunteered his service in aiding the collection, living as he does upon the margin of the River daily oppertunities will occur & I have no doubt but he will obtain them. He nor myself ever recollect to have seen or heard of the Fish Mr. Custis mentioned, but will make some enquiry. Accept Dr Sir my best wishes for Your health & happiness & believe me very sincerely Yours &c.

F. Seip,
Received June 25, 1807.[3241]

3239 Barton papers, APS.

3240 [Alligator gar, *Lepiosteus spatula* Lacépède, 1803, known now as *Atractosteus tristoechus*.] For nomenclature see D. S. Jordan and C. H. Gilbert, "Synopsis of fishes of North America," *Bull. U.S. Natl. Mus.* 16 (1882): 92. "A work on the Fishes of America, by Mr. Lesueuer, with 4 coloured plates in each number; at 40 cents per number" was announced in *Transylvania J. Med. Assoc. Sci.* 1 (3) (1828), on back of "Contents" page.

3241 Barton papers, APS.

Dr. Thomas Towles, whom Seip mentioned, served at the American army post and participated in the skirmish with the Spaniards.[3242] Nuttall visited Point Coupee, the oldest plantation on the lower Mississippi River, in January 1812, and again in February 1820 on his way to New Orleans.

Dr. Jarvis Roebuck, who took his degree in 1801, wrote from St. Croix, 14 October 1804, that he was honored to receive the "Circular" for *Philadelphia Medical and Physical Journal*, and wished to be enrolled as a subscriber for one dozen numbers. Since he is interested in "an analysis of sundry of our vegetables," he would like Barton to secure copies of Hans Sloane and Patrick Browne on Jamaican plants and natural history. "Could you not favor us with your company after the lectures and visit our little paradise?" He is "about forming a small botanical garden," and "compliments to Mrs. Barton."

On 25 June 1810 Roebuck acknowledged Barton's "affectionate favour" of 15 May. He lamented Barton's continuing gout, but gained "the greatest satisfaction" in Barton's advancement. Now that the "rupture of Denmark with England in the Estrangement of American commerce" has ended, he can resume correspondence. "My circumstances are affluent," he had purchased a plantation, almost paid for it, and is increasing it.

> *I intend removing my family to America, as soon as my children are old enough, for Education, say four years since,—by which time I expect to complete my different plans.—Imagination bounds o'er the barrier of Time, and makes me an Intimate with you, listening to those conversations, as agreeable as instructive—the Remembrance of which, has constituted, a great part of my pleasure & happiness.—Mrs. Roebuck presses my departure, & wishes to be made acquainted, with the husband's friend Doctr. Barton, and the amiable Mrs. Barton—but I must sacrifice my inclination to our mutual Interest—for a few years more—My business, I am confident, will be better conducted under my own Eyes...My friend Mr. Andrew Irwin, a relation of Mrs. Roebuck, will hand you this.*

He then "takes the liberty" of introducing the young man. Only as a postscript does he add a bit of medical news.

> *The Month of May & part of this month has been fatal to seamen & soldiers—the old complaint—bilious remittent fever—we do not combat it successfully—Have you seen Hamilton's Treastise on Typhus-Cynanche maligna as to dependence on purgatives?*

One can only wonder, having but one side of the correspondence, what Barton's inner feelings were on the possibility of having as a neighbor a physician whose interests seemed to lie more in his successful plantation and his affluence, and in boasting of these than in medical news. Did he relish the idea of this possible intrusion into his already overfilled hours? Had Roebuck assumed too much? He had written in the dedication of his thesis of "a lively sense of gratitude and affection, by the numerous testimonies of your attention in the double capacity of preceptor and friend." He had added "the fervent wish" that Barton may "enjoy health, adequate to the continuance of those labours...which have been so productive of benefit to society, and honour to yourself."[3243]

The writing of the usual dedication in the thesis was in some pupils particularly a struggle. Robert Mayo of Richmond, Virginia, wrote a labored and excessive tribute in *Study of the Sensorium* (1808):

3242 *Louisiana Hist. Quart.* 2 (1938): 83.

3243 Barton papers, APS.

> *...The honor and distinction with which you fill your several professional chairs in this University; the zeal with which you communicate instruction to your pupils, and encourage them to aspire to excellence in the cultivation of natural science, jointly with their chosen profession,—the unabating assiduity with which you encourage the tyro in science, to expect the happy reward of perseverance,—entitle you, beyond the possibility of a rival, to the thanks of your country, and the gratitude of your pupils...*[3244]

Thomas Semmes of Maryland, writing on *An Essay of the Effects of Lead...* (Philadelphia, 1801), was more direct:

> *Sir, With great pleasure I avail myself of the present opportunity, to express my thanks for the many particular marks of politeness and friendship, with which you have honored me, during my residence in Philadelphia.*
>
> *That your happiness and success in practice may be commensurate with your talents and eminence in public life, is the wish of your sincere Friend and obedient Servant The Author.*[3245]

Another Marylander, John Richardson Young, M.D., his thesis *An Experimental Inquiry into the Principles of Nutrition, and the digestive Process* (Philadelphia, 1803), was one of the first American experimental physiologists. He showed the solvent principle in the gastric juice to be an acid, but wrongly inferred that it was phosphoric acid. He also deduced the association and synchrony between gastric juice and saliva. Dedicated also to his father, Samuel Young, M.D., to Barton it read:

> *"A gentleman not less distinguished by eminent skill in his profession than by his zeal to promote every branch of useful knowledge; this essay is also inscribed, as a small tribute in respect for his talents, and gratitude for many favours received."* [3246]

Henry M. Gray, Virginian, his practice to be in the maritime parts, M.D. 1805, his thesis on croup, wrote:

> *To Benj. S. Barton, as a testimony of respect for his talents as a philosopher and physician, of esteem for his private character, and of gratitude for the many disinterested services rendered.*[3247]

Acknowledging the "lectures of six ingenious and well-qualified teachers of medicine," on page 21 of his thesis, *A Sketch of the Medical Topography of Lexington and its Vicinity* (Philadelphia, 1806) Benjamin W. Dudley dedicated it to James Fishbach of Lexington, and to Barton, to whom he wrote:

> *The ingenious and useful manner you have pursued in Your lectures, has not only convinced those gentleman who have had the pleasure of attending them of their great utility, but it has created a desire in many of us to be present, and share in the advantages of future seasons...I am obliged*

3244 See Appendix II: Roster of Barton's medical pupils.
3245 See Appendix II: Roster of Barton's medical pupils.
3246 See Appendix II: Roster of Barton's medical pupils.
3247 See Appendix II: Roster of Barton's medical pupils.

to you for the particular attention bestowed on me since my first visit to the city...[3248]

Edwin A. Atlee, native Pennsylvanian, in his essay on the effects of Music (1804) recorded his appreciation "for many instances of disinterested friendship and generosity, evinced to me while your pupil: and to express the warmest wishes for your continuance in eminence and prosperity, until you have arrived at the summit of your deserts." Henry Jackson of Savannah Georgia dedicated his thesis on...*The Efficacy of certain External Applications* (Philadelphia, 1802) to both Rush and Barton:

> *To the two Individuals, Whose generosity has enabled me to progress thus far, and whose Fraternal care truly merits the epithet of paternal, this Essay, the first effect of their common patronage, is dedicated, as the embryo testimony of a grateful heart.*
>
> *The loss of the parental bosom, at an age when I had just begun to feel its value, the affectionate attention I have since experienced from those who have supplied its place, will ever impress me with a high sense of the duties attached to, and the important considerations comprehended in, the characters and appelation of...Brother.*[3249]

These are a few of the many dedications to Barton. He, Rush, and Wistar, were the most frequent dedicatees among the medical faculty. Graduates all stressed the personal attention given them. No wonder Muhlenberg, Alexander Wilson, and Rafinesque spread abroad the rumor that Barton was stingy with his time for them: he had interests greater in his medical pupils.

When Dr. Josephus B. Stuart of Albany, N.Y., who had been Barton's pupil, learned that Horatio Gates Spafford of his city would be setting out for Monticello to visit his "great idol," Jefferson, he gave him a letter of introduction to his former professor, which included "Regards to Mrs. Barton." Spafford, "an eccentric dabbler...whose mind is stored with a great deal of knowledge original & acquired," patented certain so-called improvements in the wheel carriage, the distinguishing features of which were an eccentric U-shaped axle, fitted to wheels seven feet in diameter, suspended on an air cushion substituted for springs. The increase of the wheel diameter to seven feet offset the advantage of his invention. In an eleven-page pamphlet Spafford announced *Some Cursory Observations on the ordinary construction of Wheel-carriages* (Albany, N.Y., 1815). His advertisement (on p. 12) dated 8 February 1815 stated that "For the present, I shall charge Five Dollars for every Certificate of a Right, and for some I shall ask Ten Dollars...They are all regularly numbered, and will be registered in a Book kept for that purpose." Barton's certificate was for ten dollars. Copies of Spafford's pamphlet were also sent to Napoleon and to Count Volney. The Emperor of Russia was included: his copy was sent through the Russian Minister, Mr. Daschkoff, who had sent communications for Barton. After about three years Spafford dropped his "attempt to point out the defects [of the carriages in general use]." Among Spafford's correspondents were Alexander Wilson, Dr. Mease of Philadelphia, Drs. Mitchill and Hosack of New York, and Dr. Daniel Drake of Cincinnati. With interests akin to Barton's, Spafford composed a *Gazetteer of the State of New York* (Albany, N.Y., 1813) discussing "Wild animals," Indians, mineralogy, geology ("Catskill, a contemptible name when applied to a chain of mountains," p. 9), birds ("Virginia nightingale, the most elegant warbler,...*Loxia cardinalis*[3250] of Bartram," p. 22), etc., and an extended account of Hosack's Elgin Botanic Garden. The detailed map was expertly drawn by Mrs. Spafford.[3251]

3248 See Appendix II: Roster of Barton's medical pupils.

3249 See Appendix II: Roster of Barton's medical pupils.

3250 [Northern Cardinal, *Cardinalis cardinalis* L., 1758. AOU.]

3251 Julian P. Boyd, "Horatio Gates Spofford, inventor, author, promoter of Democracy," *Proc. Amer. Antiq. Soc.* 51 (1942): 279–350; and "Spofford, precursor of Bessemer," *Proc. Amer. Philos. Soc.* 87 (1943): 47–50.

Many former pupils wrote Barton regarding unusual case histories. A two-year-old child swallowed about two drachmas of oil of juniper. Dr. Mitchell of Attleboro, Massachusetts, gave calomel and the child recovered. Dr. George Cheyne Shattuck wrote from Boston on the spread of spotted fever during the past winter, the disease of the hip joint, and of an experiment using madder on the human skin, adding that Dr. Jacob Bigelow planned to dedicate one of the Boyleston Prize dissertations to Barton. "I have constantly been engaged in an extensive practice" wrote John R. Young from Hagers Town, Maryland, on 29 March 1804. He had prescribed opium followed by mercury, calomel, corrosive sublimate, oil of amber, and quinine bark for a case of tetanus.[3252] The outcome was left for Barton to surmise!

John Casey (M.D. 1813) practicing in Augusta, Georgia, wrote 1 September 1813 of his treatment of a mad dog bite, and a use of cotton for burns, then offered to send "such facts and observations as may from time to time offer." He concluded with his "assurances of delight" at Barton's assuming the chair of the "Institutes and Practice of Physic," and wishes for Barton's health.

Another letter came from a former pupil when Charles Giguilliat acknowledged a recommendation and remembered Barton's desire for medical and natural history news. He wrote from Savannah, 23 November 1813:

> *Dear Sir,*
>
> *I received a few days ago, your kind letter, enclosing the recommendations to the Secretary of War. You have said all that I could possibly ask of you, and I assure you that you have made me think much more of myself, for though I covet not the applauses of the many, still I desire the praises of the few. I have not the least doubt that your recommendation will be the most essential service to me, not only in procuring the place I now solicit, but in advancing me here after in the Medical Staff.*
>
> *You may be assured that I shall do my best endeavour to collect for you, Specimens of any animals or plants which I should think curious or useful. We have some native plants of very active properties, and in common use among the planters in the diseases of their Negroes. If I should get a post in the Army I shall be better inabled to make the proper experiments to ascertain their virtues, as my private practice has been heretofore, very limited. There is a plant very common in our low Country called the Wild Hippo[3253] or big Hippo (the botanical name I do not know) which the old planters tell me, is the best thing they have tried among their negroes, for the secondary Symptoms of Siphylis, and in Gonnorrhia virulenta. They exhibit a decoction of the root. It is always cathartic, generally emetic, and sometimes diuretic. I intend to experiment now particularly on this plant, and shall transmit to you the result, together with some of the seed, and dried roots, and if I can procure it a drawing of the plant in full bloom.*
>
> *There is in the Military hospital here, a Diabetic patient, upon whom Doctor Proctor, the Hospital Surgeon has tried various remedies without success, among other Cantharides, Arsenic, and Allum. I recollect you*

3252 Barton papers, APS.

3253 Hippo is *Euphorbia ipecacuanhae* L. of the Savannah pinelands, the root thick and cylindrical, or *E. corollata* L., sharing its properties and vernacular name. The Cherokee people used a "decoction drunk for gonorrhea and similar diseases" (Hamel & Chiltoskey, *Cherokee Plants*, 45). The Georgia Negroes used roots, including hippo and pink root (*Spigelia marilandica* L.), in mixtures (W.P.A., *Drums*, 57, 232–233). Hippo for ipecac probably arose from the dialect of Cockney sailors who met it in Brazil (cf. British pharmacopoeia, 1725).

mentioned a case last winter which you cured, but I have unfortunately forgotten the successful remedy. If you would be so kind as to let me know it you would confer an obligation not only on me but on the Hospital Surgeon also.

I have endeavoured to answer your inquires from the best information I could collect, from persons long resident in this vicinity. If there is any thing in which I can be of any use to you you may command, my dear Sir the services of your grateful friend Charles Giguilliat[3254]

One pupil knew Barton for twenty-one years, since he stayed to practice in Philadelphia until after Barton's death and was a member of the American Philosophical Society and the College of Physicians. They were not, however, close friends. Charles Caldwell (1772-1853), "the Horatio Alger of Medicine, the enfant-terrible of Philadelphia and the West, the fiercest and fightingest of pioneers, the spectacular egoist, the non-stop orator,"[3255] at first impressed with Barton's courtesy and kindness, developed into one of his harshest critics. He was born in Caswell County, North Carolina, son of Presbyterian Ulster parents who had come to Delaware in 1752. He was educated by private tutors and in the local public schools. After brief study for the ministry he chose medicine, apprenticed with a Dr. Harris of Salisbury, North Carolina, then entered the University of Pennsylvania in 1792, taking classes under most of the medical faculty, winning his degree in 1796. He soon established a medical practice in Philadelphia, and aimed at a position on the medical faculty of the University, but his prejudices, rash behavior, over self-confidence, and self-esteem precluded his election. At first impressed by Rush he quarreled with him, but eventually resumed a warm friendship. His first meeting with Barton had been felicitous, since he had run out of funds after a short time in the city. Barton, remembering his own student days far from home, gave him his class ticket with the suggestion he pay for it "when convenient."

Unfortunately, his admiration for Barton did not survive their several differences. On one occasion Barton had been furious when he learned that Caldwell had arranged for the publication of collected theses without consulting the medical faculty, who were considering at that time launching a medical journal that would include chosen theses. On a later occasion Caldwell accused Barton of publishing as his own ideas that he had given him, an example, that Barton had changed his ideas about the cause of leucodermia in *Henry Moss* (1806). Color was a subject about which Barton had speculated from his student days. Caldwell made a like accusation that Rush had adopted ideas from conversations with him. Confrontations colored Caldwell's memory of Barton, as Caldwell wrote in his *Autobiography*:

The character of that gentleman was so extraordinary a compound of incoherent and jarring, not to say contradictory elements, that to delineate it correctly is no easy task; and, to augment the difficulty of the tasks, his character was as fluctuating as it was self-inconsistent.

I have known but a few men who made, at first sight, on common observers, a more vivid and favorable impression than Dr. Barton. But that impression was neither profound nor lasting; because he was himself as wanting in real profundity, as he was in steadiness and consistency with himself. In person, though not critically handsome, he was manly and striking. In stature, he was considerably above the middle height. His figure was well proportioned, his features strong, and his countenance lit up by eyes inordinately large, black and full of fire: and, by his affability and fluency in conversation, he exhibited those traits to great advantage. But the fire from his eyes was that of feeling and passion, rather than of superior

3254 Barton papers, APS.

3255 Caldwell, *Autobiography Reprint*, xxvi; Edward E. Hume in *DAB*.

> *genius and of that pre-eminence of intellect to the possession and reputation of which he certainly aspired: for he was one of the most irritable and passionate of men. Yet he did possess no small amount of what is usually, though not accurately, termed genius: and, in observation and mere collection of facts, his intellect was uncommonly active, and not unsuccessful. But, in the higher operations of intellect–judgment, discrimination, and the exercise of reason he was far from being distinguished. On the contrary, he was so strikingly deficient in them, as to commit more numerous blunders in his efforts to signalize himself in them than any other man I have ever known, who possessed in public estimation, a standing so elevated.*
>
> *For those blunders he was indebted chiefly, perhaps entirely, to the excess of his pretensions and claims over his abilities and attainments: and his excesses related equally to science, scholarship, and a precise knowledge of the contents of books–in each of which he was ambitious to be thought unsurpassed, if not unrivalled.*

Although Barton had faults Caldwell listed, when it is considered that Caldwell demeaned almost all of the professors, including even Rush, and that he judged everyone else by the high standards of intellect and behavior of which he considered himself possessed, one tempers the acceptance of his fascinating portrait of an "enemy."

Barton was an avid collector of facts: essential for the study of natural history, his love. His "judgment, discrimination, and the exercise of reason" had their successes and limitations, more obvious because of his health and his involvement with so many different fields. Caldwell's statement that Barton drew little from nature cannot be accepted. He had never been taken into Barton's confidence and had little knowledge of Barton's time in the field. He was forced to write further:

> *To the memory of Dr. Barton, however, it is due to say that, by introducing into his lectures on materia medica no small amount of botanical knowledge, together with copious explanations of the principles and practice of therapeutics, he was eminently instrumental in giving to the chair of that branch of the profession, the respectable rank it holds at present, in our schools of medicine. And this fact I record with the more readiness, and the higher gratification on account of the unfavorable remarks, in other respects which truth has compelled me to make in relation to him. For, to commend is a much more pleasing office than to condemn, even when the subject of commendation is an enemy. Previously to the promotion of the doctor to that chair, the lectures delivered from it, in the United States, consisted of very little else than dry details of the names, classes, imputed properties, doses and modes of preparation, and exhibition of medicinal substances.*

After concluding that Barton failed in the teaching of the theory and practice of medicine in the chair he unexpectedly assumed after Rush's death and, ill, taught for only two terms, Caldwell stated again that Barton taught material medica with "ability and effect." He continued:

> *As a teacher of botany he possessed also at least one very high and important quality–an earnest and exciting enthusiasm, by which he induced his pupils to engage in the study of science with a corresponding earnestness, accompanied by a resolution to teach themselves...the most valuable and lasting benefit a public teacher can confer on his pupils is to implant in them a spirit of study and emulation by the influence of which, as springs of action and incentives to energy and exertion, they cannot fail*

> *in the attainment of knowledge... If he inspires them with an ardent love of science, and teach them in what way they may most easily and effectually render themselves master of it, he discharges his duty, and is a distinguished benefactor, not only to them, but to the community where they reside.*

Caldwell concluded that Barton held a highly respectable rank in the Medical School, but was never one of its "pillars of support," the phrase not amplified, but colored by known dissension within the school.[3256]

The conclusion of Dr. Joseph Carson, a later professor in the Medical School, is more accurate. "During the twenty-six years that he was connected with the Medical School [Barton] occupied a position of prominence, and was greatly instrumental in promoting its rising reputation."[3257] Caldwell had applied for the Chair of the Theory and Practice of Medicine on Rush's death, and again on Barton's death, but then it went to Dr. Chapman, Materia Medica to Dr. John Syng Dorsey, and botany to W. P. C. Barton. Caldwell was appointed to the Faculty of Physical Sciences. He lectured also at the Almshouse and to the public. In 1819 he moved to Lexington, Kentucky, where he established a medical school at the University of Transylvania. After eighteen years there he moved to Louisville to establish another medical school. In 1849, much to his chagrin, the trustees discharged him on grounds of his age. He devoted the next four years to his *Autobiography*, where he reminisced over his successes and all the animosities displayed by and toward the many with whom he had come into conflict. Despite his personal differences with Barton, Caldwell was more influenced by Barton's milder treatments than by Rush's excessive bleeding and purging. Like Barton he realized that some ailments ran a natural course despite treatment.

Among the appreciative pupils was one of Barton's most successful physicians, George Hayward, M.D. 1812, his thesis not published. He wrote to congratulate Barton on his succeeding to the Chair of the Theory and Practice of Medicine from Boston 10 September 1814:

> *Dear Sir, I have this week returned from Europe, where I have been ever since I had the pleasure of seeing you. Though I have been in London, Edinburgh and Paris, I have found no place where the advantages were greater so far as it regards the lectures, than at Philadelphia. From the greater population of European cities there is more disease and also more cases of surgery, but it is only however in practical advantages that any of them can surpass your school. I feel proud that my preceptor is elevated to the head of the first medical institution of our country and one which is not surpassed in any other...The advantages I enjoyed under your tuition I never can forget and I take peculiar pleasure in subscribing myself your grateful pupil and humble servant.*[3258]

Hayward had studied under Dr. Ashley Cooper and other eminent physicians in Europe. Back home in Boston he joined with Channing and Bigelow, among others, in founding a medical club, the papers read eventually going into the *New England Journal of Medicine and Surgery*. When Harvard established the chair, he was made Professor of Surgery in 1835.

Walter Channing of Boston, which he found a city over influenced by pride of wealth and family, remembered his Philadelphia experience. Having left Philadelphia without his medical degree because, he insisted, of Barton's ill health, after a trip abroad before returning to

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[3256] Caldwell, *Autobiography*, 160–163, 171–173. "Old Caldwell of Kentucky, a noisy, inconsequential man, was in London in the summer picking up books on Nat. Hist.": Wm. Cooper, Paris, 7 Jan. 1822, to John Torrey, NYBG.

[3257] Carson, *History*, 132.

[3258] Barton papers, APS.

Boston he wrote for a certificate. A great deal of mental turmoil and temporizing must have occurred before he could write diplomatically on 20 March 1812 to ask the favor from his former professor. Quite accurately for the time he contrasted Boston and Philadelphia medical practice, lauding the philosophical and inquiring attitudes of Philadelphia physicians:

My Dear Sir,

It was Sir with the deepest regret I left Philadelphia. I left the society of men in my profession, elevated by talents & industry far above any this country can afford. I left my preceptor, from whom I had received the kindness & patronage of a father. I left his family, from whom I had always received the interesting civilities of my nearest connections. Such society has so endeared your city to me, that I shall never lose sight of it and if recollection should seem to fade, it will be the consequence of not being an hourly observer of its rapid improvement in every art & science which can dignify, or adorn my country.

I had Sir an opportunity of contrasting the state of medical science & practice abroad with that at home. With you it is a philosophical pursuit, it becomes more interesting, because it is daily improved. With us Sir it is the medium of subsistence only, and secondhanded are all our acquisitions. Its professors seldom agree, & frequently openly disagree, and more unfortunate for our science is influence of family [which] *will make moderate talents the means of almost splendid wealth, while more deserving men not so fortunate by* <u>accident</u> *stand to become sycophants.—I almost mourn that fortune has not smiled on me & given me the means of supporting myself in Philad untill I had made myself deserving one by industry & propriety of conduct. I said almost mourn, I have truly deplored my fortune with painful emotions indeed. But Sir when the Faculty of Boston will* <u>permit</u> *me to commence practice, which notwithstanding my credential, they have not yet done I shall commence practice. And by cherishing that ambitious industry which you have lighted up in my breast, I hope in due time to become, at least, an useful member of Society. I find Sir it is necessary for me to exhibit certificates to the faculty here, that I have studied medicine for 3 years with some regular bred physicians before I can practice. From July 1808 to March 1810 I had the pleasure of studying under your care. You will confer on me an additional obligation Sir if you will favor me with a certificate to that effect, to submit to the Medical Society at their May meeting at which time with their approbation I shall commence practice here. My partialities for Philada will I hope excuse the candor with which I have expressed myself to you, if not Sir that confidence which I have with such renewed pleasure placed in you, that friendly intercourse which you allowed me to cherish, & which I consider the proudest possession of hope I may claim, will I trust be a sufficient excuse. I left you sir while you were suffering under disease, I sincerely hope sir that you have entirely recovered, & regret that my unavoidable arrangements for my departure prevented my remaining & administering what offices my sincerest dispositions suggested. Dr. Shattuck is very well, & bears always in mind your civilities to him, & wishes me to present his best respects—I will thank you to express my respectful sentiments of regard for Mrs. Barton & your children. All your private pupils are remembered by me with sincere friendship—should your many avocations allow you time Sir to write, depend on it you could not confer a greater honor on Your affectionate & respectful Pupil*

Walter Channing

> *Dr. Shattuck & myself go on a mineralogical excursion as soon as the season permits. We shall be happy to transmit you such specimens as the environs of Boston will afford.*
>
> [BSB:] *Answered. I kept no copy of my letter.*[3259]

Had Barton felt the letter sincere? Had he remembered his pupil as gifted? Did he resent the mention of his illness as the excuse for Channing's departure? Why do we not find a copy of his answer to Channing? He usually kept copies, but, his health deteriorating, he may have felt the need to conserve his strength for current pupils. Channing, part of a triumvirate of Boston students that included Hayward and Bigelow, chaired the founding meeting of the New England Society for the Promotion of Natural History or the Linnaean Society of New England, which met at the home of Bigelow on 8 December 1814. Channing's early enthusiasm for collecting minerals carried over to the founding of the Boston Society of Natural History in 1830—he was a charter member—but it is for medical advances that he merits notice here: the first description of pernicious anaemia of pregnancy and his early advocacy of anaesthesia in obstetrics. He taught obstetrics at Harvard for nearly forty years. Certainly the early association of Bigelow, Hayward, Shattuck, and Channing with Barton influenced their enjoyment of, and contributions to, natural history.[3260]

Jacob Bigelow, M.D. 1810, who became a Harvard professor of materia medica and botany, a Harvard graduate of 1806, had been introduced to Barton and the University by William Peck as "desirous to avail himself of the great advantages which Your excellent establishments offer him."[3261] Although in old age he remembered Barton at this period as "egotistical and a bad reader and speaker," yet "with Dr. Barton, to whom the Eastern students generally attached themselves, I became a private pupil, and got from him the rudiments of a botanical taste which adhered to me for many years afterwards. In 1810 I returned home having received the degree of Doctor of Medicine in Philadelphia, and having formed many agreeable acquaintances and associations in that city." Bigelow deplored Barton's not having completed an American flora, and his own efforts, spurred on by this lack, show Barton's influence. His home area he found handicapped by a lack of reference material. Not only were specimens not at hand:

> *But above all, the thing we sorely lack in this land of Milk and molasses, is good Botanical books & plates. I should jump out of my skin at the sight of Smith's Exotic Botany, Curtis' Flora Londinensis, Dr. Thornton's lottery book, the illustrations of Linnaeus, Willdenow's Species plantarum & many others. I have omitted Curtis' Magazine & Sowerby's botany because we have these in the Athenaeum—Upon the faith of Mussulman I think a man might signalize himself without difficulty among New Englanders who are as ignorant of botany as a nation of Jackasses.*[3262]

Where had he become acquainted with these botany books? In Barton's library. He soon collected plants within a ten mile radius of Boston, and produced his *Florula Bostoniensis* (Boston & Cambridge, Mass., 1814). His *American Medical Botany, Being a Collection of Native Medicinal Plants, Concerning their Botanical History and Chemical Analysis and Properties and Uses in Medicine, Diet & the Arts, with Coloured Engravings* (Boston, 1818–1820, 3 vols.) followed Barton's example of citing European and American sources, again many he had first become acquainted with in Barton's library. In his works he demonstrated

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[3259] Barton papers, APS.

[3260] Bouvé, "Boston Society," 4–14; Bell, "Boston," especially pp. 182–183; Greene, "Boston"; Greene & Burke, "Minerals," 87–88; Gifford, *American Science*, passim.

[3261] Letter, W. D. Peck, Cambridge to Barton, 20 Oct. 1809, Barton papers, APS.

[3262] Letter to Thomas M. Jones in London, 12 June 1812. Hunt Institute for Botanical Documentation, Pittsburgh.

his lively acumen and independence. With Barton and Wistar he rejected excessive bloodletting and large doses, and he would not, as Rush, reject reliance on nature. In 1822 there appeared his *Treatise on Materia Medica* (Boston) and in 1835 *Discourse on Self-limited Diseases* (Boston). Besides botany, Bigelow had a taste for technology, and in 1816 he became Rumford Professor of the Application of the Sciences to the Useful Arts, this added to his Lectureship in Materia Medica and Botany, which in 1818 became a Professorship. In 1812 he was elected a member of the American Academy of Arts and Sciences and in 1814 was one of the founders of the Linnaean Society of New England. Witty, genial, and generous with his time, he carried on a lively correspondence both in America and Europe.[3263]

Among Rush's papers at the Historical Society of Pennsylvania rests a presentation copy of Bigelow's *Poem on Professional Life* (Boston, 1811), 6–7, suggesting his own quandary as to choice of profession, and his awareness of Rush's early indecision.

> *So thinks the youth, by hope and fear addrest,*
> *When just dismissed from Alma mater's breast;*
> *Who pausing doubts, and fain would know the way,*
> *That yields the easiest task and promptest pay;*
> *Who undecided, cautious, slow and loth,*
> *Weighs the profession, faculty and cloth;*
> *Till tired of doubting much, and halting long,*
> *He makes his desperate choice, right or wrong.*
> *So thinks he too when, three years left behind,*
> *He issues forth equipped to serve mankind;*
> *Ripe for his task, and to his calling true,*
> *With books well read, and well digested too;*
> *He rents a room on first, or second floor,*
> *And hoists his gilded name above the door;*
> *Ready on this, and each succeeding day,*
> *To do a world of good, and take a world of pay.*

William Baldwin (Figure 40), M.D. 1807, his thesis on ship's diseases, was one of the more promising botanists of the period. He had been chosen to accompany Long's expedition to the Rocky Mountains, but died before he got any distance beyond St. Louis. He was a native of Chester County, Pennsylvania, a classmate in the winter of 1802–1803 and longtime correspondent of William Darlington, and an associate of Dr. Moses Marshall, whose uncle Humphry Marshall had a rich collection of native plants, the Marshalltown "Botanic Garden." As ship's surgeon Baldwin sailed in 1805 to Uruguay, where he met Bonpland, and then on to China on the *New Jersey*, reaching Macao and Canton in 125 days. Rather older than most of the medical pupils—he was twenty-six when he received his degree—he was a victim of two afflictions, poverty and tuberculosis. He moved to practice in Savannah and St. Mary's, Georgia, hoping thereby to benefit his health. Both Muhlenberg and Darlington treasured his correspondence.[3264] It contains a number of references to Barton. Although Baldwin deplored Barton's neglect of grasses and sedges, on p. 23 of his thesis he acknowledged his full measure of felicity:

> *Of the illustrious Professors...They individually claim from me a tribute of the warmest respect. That I may ever merit their esteem and friendship is my ardent wish. With Professor Barton, I have had the honour of a more intimate acquaintance, and am happy in declaring how*

3263 Oliver Wendell Holmes in *Proc. Amer. Acad. Arts Sci.* (1879): 23. Donald Culross Peattie and John F. Fulton in *DAB*.

3264 See Darlington, *Baldwin*; for notes on Darlington's unfortunate excisions see Ewan in Hafner reprint, x.

much this acquaintance has contributed to my happiness. His zeal for the promotion of science in General and the success that has attended his valuable labours, in exciting a spirit of useful enquiry, reflect equal honour on himself and the profession of which he is so worthy a member, and will entitle him to the praise and gratitude of his country and mankind.[3265]

A particularly sensitive person with more ambition than his strength allowed, he aimed at the publication of his own descriptions of new species. He was deeply chagrined when Barton, Nuttall, Elliott, and Pursh published their own descriptions of his new species without properly recognizing in print that he had first shown them the specimens and given them the information on habitat. Baldwin may have commented on this to Barton, and a schism resulted. On 15 May 1813 Baldwin wrote Muhlenberg:

I am sorry to observe that when I was in the city last, he was in a humor to declare to one of my friends that I had treated him with base ingratitude!! I really regret that I have been unable to retain the good opinion of the Professor, as I have always felt a veneration for his talents, and considered myself under obligations to him for his polite attention to me while I attended his lectures. I am really not conscious of having done anything to forfeit his esteem, and I had not neglected to correspond with him when circumstances admitted—But I think, I have much reason to apprehend, that the Groundwork of my base ingratitude consists in my Corresponding with you!!![3266]

Muhlenberg discussed with his friends Barton's coolness and lack of generosity toward him. Baldwin's wound, though paining him over the years, gradually healed, and shortly before Barton was to sail for Europe he wrote him:

Savannah, February, 16th. 1815

Dear Sir

You will perhaps be surprised to hear from me after having been silent so long: but I hope you will pardon me for the liberty I now take in addressing you when I frankly inform you that the cause of my not having continued to write and to furnish such information as I might have collected in this southern part of the community, was entirely owing to some Observation which I understood you had made use of respecting me in the Autumn of 1812. When I was last in Philadelphia. These observations (respecting my having previously neglected and treated you with ingratitude) were of such a nature as to prevent my calling upon you and communicating the little information which I had then possessed. As I had not intentionally neglected to make you all the returns in my power for the kind attention which you had uniformly had the goodness to bestow upon me, my feelings were at that time deeply wounded, and it has ever since been a subject of painful reflection to me:—But I flatter myself that Time, which ought to wear out all unfavorable impressions that have been founded in mistake, has removed from your mind, as well as from mine, those feelings and sentiments that have so unfortunately interrupted an intercourse from which I had anticipated so much pleasure and instruction.—Waving, therefore, all further ceremony or apology, I shall once more make an effort to fulfill those obligations which I ever wish to

3265 See Appendix II: Roster of Barton's medical pupils.

3266 BPL? taken from Harper, MSS.

feel towards a preceptor, from whose instructions I have in days that are past received so much satisfaction, and which have laid the foundation for the most rational amusements I have enjoyed since that happy period.

During a residence of nearly two years in St. Mary's I have kept a register of the weather along with a Calendarium flora and brief notices of the prevailing diseases &c.

I shall conclude this letter by merely giving you a Catalogue of some plants that I have discovered which appear to be new, or that have more probably never been described. Among my phanerogamia are:

[He lists 14 genera, giving Latin descriptions of several, comments on decisions of Brickell and Elliot, and an Indian name or two.]

Of Gramine and Cryptogamia I have many new species, and probably some new genera as I have been prevented from prosecuting the latter interesting branch of botany for want of suitable books. Many of the Phanerogamia above mentioned have been examined by LeConte, Elliott and Muhlenberg. Your confirmation of them would give me great pleasure. Among these also I may possibly have some new genera.

To Zoology, Entomology, &c. I have paid too little attention, and indeed have hardly liesure to attend to so much besides my professional duties. I have understood that you laterally enjoy better health—Wishing you a continuance of this distinguished blessing, I remain My Dear Sir Your Friend W. Baldwin.

P.S. Our mutual friend Dr. Grimes, I am afraid is lost to humanity and to the community. His long habits of intemperance have evidently impaired the power of both body and mind. But, he has once more attempted to reclaim himself from the power of this most deadly foe to the happiness of man—And may Heaven grant him success! It is melancholy thus to perceive the prostration of those qualities, which were so happily calculated to render him pre-eminent in his profession as well as an ornament to Society.[3267]

Had Barton the satisfaction of receiving Baldwin's letter before he left for Europe? Baldwin had complained to Muhlenberg that he had received no reply. Or did the letter await the ailing traveller on his return home?

Other noteworthy trans-Appalachian pupils took medical concepts and a philosophy of natural history of the Atlantic colonies to Ohio and Kentucky. Such was Charles Wilkins Short (1794–1863), who knew Barton only in his last year of teaching, but found him stimulating in the field, and was influenced by him in the choice of his thesis, the medical uses of the cedar *Juniperus sabina*. After graduation from Transylvania University and apprenticeship under his uncle, Dr. Frederick Ridgely, he entered University of Pennsylvania medical school as a private pupil of Wistar, earning his degree in 1815. In 1825 he returned to Transylvania as Professor of Materia Medica remaining there some years, all the while devoting himself to botany and correspondence with others of like interests, for examples Drake and Darlington. He was also involved with the establishment of *Transylvania Journal of Medicine and the Associated Sciences* (Lexington, Ky., 1828–1839, ceasing for lack of financial support). His herbarium is now at the Academy of Natural Sciences in Philadelphia.

3267 Barton papers, APS. Was Dr. Grimes the former pupil?

Daniel Drake,[3268] twenty years of age when he entered Barton's classes in 1805, was to influence his corner of America in a way seldom excelled. In his "mellifluous voice" and his "beaming and genial" countenance he expounded on materia medica with all of Barton's enthusiasm, stressing the interrelationships of plants and animals, and the periodicity of their reproductive cycles (phenology), which is related to biologic clocks. Drake published a floral calendar in his almanac-like *Notices concerning Cincinnati* (Cincinnati, 1810), clearly influenced by Barton's chart, his *Fragments*, which had in turn been made with considerable help from William Bartram.

Drake was born near Bound Brook, New Jersey, but spent his youth near May's Lick on the Ohio River in Kentucky. He was the son of a Baptist gristmill farmer who had determined that his son should become a physician. Growing up in a log cabin, almost illiterate, young Drake became a "frontiersman of the mind...a leader in the second conquest of the West." At fifteen he became the first medical pupil in Cincinnati, the apprentice of Dr. William Goforth, who was then thirty-four. Living in the doctor's house, he found that his first task, that of grinding mercury into mercury ointment, "hardly differed from grinding corn in the hand mill."[3269]

After four years' apprenticeship, despite the fact that he had never witnessed a chemical experiment or the dissection of a human body, he became Dr. Goforth's partner. He was the first person beyond the Alleghenies to be vaccinated with cowpox serum provided by Dr. Waterhouse, who had procured it from England. In 1805 Drake borrowed money from his father to enter the University of Pennsylvania, but was able to pay only Professors Rush, Woodhouse, Wistar and Physick. Unable to pay for a ticket to the hospital library, he had to borrow books in off-hours from several fellow students and from Dr. Dewees and Dr. Barton who "were very kind to me in this way."[3270] Barton also permitted him to attend his lectures. Unable to finance the completion of his degree, he returned to practice in Cincinnati. He contributed his first essay to Barton's *Philadelphia Physical and Medical Journal*, "Some account of the epidemic diseases which prevail at Mays-Lick, in Kentucky."[3271] He again entered the University in 1815 and obtained his degree, showing great promise.

Drake had been greatly impressed by Rush's presence and prestige as an intellectual leader, and under his influence Drake unfortunately became "a strenuous advocate of sanguineous depletion." From Barton he gained his wider perspective of the natural universe and development of critical observation. From Barton he developed his interest in Indian mounds and their origins, and the inspiration to found the *Western Journal of Medicine and Physical Sciences* (title varied, Cincinnati, 1829–1838), which he edited, and which "only brought him into debt."[3272]

Leaving a tribute both sincere and lasting was another of Barton's more outstanding graduates: William Darlington (1782–1863), who had grown up on a farm in Chester County, Pennsylvania, apprenticed to a Dr. John Vaughan of Wilmington, Delaware, then entered the University of Pennsylvania receiving his degree in 1804. His thesis on the mutual influence of habits and health (his motto became "Man is a bundle of habits") was dedicated to Dr. John Vaughan. He cited E. Darwin, William Cullen, and on page 20, Barton, "The scientific Professor of Materia Medica," and again on page 26. On page 35 he acknowledges the "illustrious Professors in this University," then that the "Professor of Materia Medica, in particular has conferred obligations which it will ever be my duty and pride to acknowledge. To his polite

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3268 Edward D. Mansfield, *Memoirs of the Life and Services of Daniel Drake...* (Cincinnati, 1855), a prolix account, mentions Barton on pp. 68–69, 79. He did not mention on p. 67 that Barton had permitted him to attend his class without fee, contrary to "established policy" (Richman, *Chapman*, 67), or that Barton and Dewees had given him access to their libraries.

3269 Flexner, *Doctors*, 161, 165–234; Shapiro, *Drake*; and Barton, p. xv.

3270 Mary Louise Marshall, "The versatile genius of Dr. Drake," *Bull. Med. Libr. Assoc.* 31 (1943): 291–318.

3271 *PMPJ* Suppl. 2 (1807).

3272 Gross, *Lives*, 662.

and friendly instruction I owe that taste for the study of nature, from which I anticipate the most rational and lasting pleasures of my life. It is his happy attribute to fascinate his pupils with the sciences he so ably teaches."

Then expressing his acceptance of one of Barton's most stressed themes, the errors of Buffon, Darlington continued:

> *It is high time for the haughty bigots of the old World to acknowledge and revere the scientific talents of America. No longer can it be said, to the reproach of our country, that all her productions are of an inferior order. As she has produced a Washington, a Franklin, and a Jefferson, to wrest and preserve our rights and liberties from the grasp of transatlantic tyrants,—so has she given us a Rittenhouse, a Rush, and a Barton, to maintain our dignity and independence in the various branches of Philosophy, Medicine and Natural History.*

After serving as ship's surgeon on a voyage to Calcutta, Darlington returned to settle and practice in Westchester, to establish the County Cabinet of Natural Sciences, become a trustee of Westchester Academy, and to engage in a number of civic enterprises. He continued his interest in botany, publishing *Florula Cestrica* (West Chester, Pa., 1826), and *Flora Cestrica* (West Chester, Pa., 1837).

In a letter of appreciation to Barton he wrote: "I left my preceptor from whom I had received the kindness & patronage of a father—I left his family, from whom I had always received the interesting civilities of my nearer connections," and he sent his regards to Mrs. Barton.[3273] In his "Reminiscences" he recorded that he "had entree to Prof. Barton's residence, as a familiar Pupil and friend,—of which I gladly availed myself. Mrs. B. a most estimable Lady, ever received me and treated me with Motherly kindness. In my visits there, I often met...interesting persons:—such as the Rev. Nicholas Collin,...who had been a pupil of Linnaeus; Mons. Turpin, a French Artist...; also that singular character Rafinesque,—then a young Botanist, and stranger in the U. States."[3274]

William Paul Crillon Barton had over the years developed close ties with his Uncle Benjamin in their mutual interests in medicine and especially in botany. While he was still a pupil at the College of New Jersey, perhaps between terms, his father William reported to Barton from Lancaster 8 October 1804: "William sends you what he has copied—He says there are sundry blanks for words which he could not make out." Barton's hand was notoriously cramped and illegible—was William Paul making a copy of a manuscript for a publisher? As an enthusiastic pupil in Barton's classes he joined in field excursions. He also made drawings for his uncle. He remembered: "I have frequently painted these subjects for him. In all my drawings made for him, whether of plants, animals, bones, &c. I learnt the absolute necessity (to please his eye) of adhering very faithfully to my models. The first lesson I ever received of the scrupulous correctness in drawings of nature, were from him."[3275] Professor Barton had made the financial burden of medical school easier for him. On board the frigate *United States* in 1809 as ship's surgeon, he wrote his uncle, "[I] shall ever feel infinite gratitude to you, who principally procured [the position] for me," and again, "I shall never forget the interest you have taken in my welfare, and the many favors you have conferred on me."[3276]

As Barton grew more crotchety and as ill-health and overwork made him resent outside intrusions on his time, William Paul drew apart from his uncle after his return to Philadelphia

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3273 Barton papers, APS.

3274 Manuscripts in Pennsylvania State College, West Chester.

3275 Barton, editor, *Elements* (1836), 13.

3276 Barton papers, APS. See also our Chapter I.

from his years of sea duty, and so he now turned for botanical discussions and aid to Corrêa da Serra, Zaccheus Collins, and while on visits to Lancaster, to Muhlenberg. Evidently Muhlenberg convinced him to concentrate his study on the Philadelphia area, rather than as Barton had aimed, on the whole of the known United States. When W. P. C. Barton published his *Florae Philadelphicae Prodromus* (Philadelphia, 1815), copyrighted 20 October, he dedicated it to Corrêa, although he acknowledged his uncle's inspiration in a footnote to the Preface, dated 10 October:

> *To Professor Barton, who kept alive, cherished, and increased to a bright flame, a little spark of botanic fire, is certainly to be attributed the present conspicuous predilection for the study of this alluring science in Philadelphia... Many years ago Dr. Barton successfully applied himself to the production of an elementary work on the principles of botany, of acknowledged excellence. Let not the name in the title page of this book lessen in the mind of any one the force or effect of these observations. The writer knows himself to be capable of impartiality on the subject of them, and in publishing them has taken advantage of the absence in Europe of the Professor, whose presence and desire would in all likelihood have caused their suppression.*

His nephew had probably been aware of complaints that Barton had "received more than he had given" to Muhlenberg, and grateful for attentions to himself, he wrote of his uncle's constant critic:

> *The pious, the learned Muhlenberg is no more! With him has fallen one of the oldest, the strongest pillars of that extensive fabric his exertions contributed so largely to raise—the edifice of botanick science in America. His merits, though chiefly confined to nomenclatural botany, were of the highest order. In giving information he was conscientious as truth itself, and his patience and industry in correcting the errours and confusion of botany, have scarce a parallel. Ever ready to assist the young botanist, and to banish from his sight, obstacles which in his own progress he himself had perseveringly overcome, it seems extraordinary that few, if any, of the large number that have profited by his labours...should have acknowledged the extent of his assistance!...Dr. Muhlenberg enjoyed the correspondence of some of the first European botanists of the age, Schreber, Smith, Willdenow, &c...*[3277]

What had been the feelings of Barton, home from Europe and very ill, on learning of the publication of the work, and of the special acknowledgement of the generosity of time given to young botanists by Reverend Muhlenberg? Can this have been the reason that W. P. C. Barton was denied access to his uncle's papers when preparing his eulogy for delivery before the Philadelphia Medical Society? Except that he seemed unaware of the wealth of botanical and zoological material his uncle had accumulated, he did justice to his published accomplishments, his handicaps of early poverty and lifelong poor health. His main error was that he perpetuated the myth that Barton had gone to Göttingen University to obtain his medical degree. He quite likely believed it, his father William perhaps never having disillusioned him. Aware of the dissension among the physicians of university and city, and the lack of understanding and sympathy of many of Barton's contemporaries, he spoke circumspectly, yet with reverence and appreciation.

[3277] *Florae Philadelphicae Prodromus*, vii, fn.

After the death of his uncle, William Paul applied for the Professorship of Botany and Materia Medica in the University, his father writing to the Honorable [Edward] Tilghman, a [former] trustee of the University, on behalf of "my son, the Doctor." The trustees of the University had decided to eliminate the combination of botany and natural history. The professorship of botany would be retained in the medical school, and W. P. C. Barton was elected to it. Natural history was moved to the newly established Faculty of Natural Science, and Caldwell assumed that post. W. P. C. Barton carried on the tradition established by his uncle of emphasizing study in field, garden, and greenhouse, the garden in the yard of the hospital, the greenhouse a notable one under his care.

Dissatisfaction over the conservative views of older members of the medical faculty led a group including W. P. C. Barton to establish Jefferson Medical College, which opened in 1825.[3278] He taught there for three years, then became lecturer at the Therapeutic Institute of Philadelphia, teaching botany and materia medica. He was a member of the College of Physicians of Philadelphia, the American Philosophical Society, and the Philadelphia Linnaean Society, of which he was president until its demise, sometime after 1817. With material gathered during his association with B. S. Barton he laid the groundwork for *Vegetable Materia Medica of the United States; or Medical Botany* (Philadelphia, 1817–1818, 2 vols.), *Compendium Florae Philadelphiacae* (Philadelphia, 1818, 2 vols.), and *A Flora of North America* (Philadelphia, [1820–] 1821–1823 [–1824], 3 vols.).[3279] The work for which he is best remembered by botanists is his 1836 edition of Barton's *Elements of Botany*, which contains the eulogy for his uncle that he prepared for presentation before the Medical Society, then slightly revised. His naval career is discussed in our Chapter I, Antecedents and Contemporaries.

Medicine was moving away from its excessive purges and bloodletting; chemistry and physiology were fast developing, and importantly botany was now on a progressive course. Besides Lewis, Custis, and Baldwin, both Pursh and Nuttall were indebted to Barton. There also were now the younger Barton, Darlington, Drake, Bigelow, and Short to advance knowledge of the plants of the growing Republic.

Books—Lending and Borrowing

With so few interested in natural history in the early days of the country, it was natural that certain books were particularly sought. Barton had been purchasing books even before he entered college and had reduced his spare funds in Edinburgh and London to acquire items. He continued adding source materials throughout his life, his last purchases (unidentified as such) obtained on his trip to Europe in 1815. Lending and borrowing from friends of like interest was the answer to the problem of lack of books in the young nation. In spite of the uncertainties of safe transport, loans went to Lancaster, to Massachusetts, Winchester, Monticello, Muskingum, and Gnadenhütten. Books were borrowed from Monticello, Massachusetts, and the "Woodlands." On one occasion, undated, Barton wrote to Dr. MacNeven, "Books came safe to hand...About new works, my anxiety is apt to be too great."[3280]

Early in their friendship Barton loaned books to William Bartram. For example, on 1 December 1792 there had been Pennant's *Indian Zoology*, ed. 2 (London, 1791), recently received from the author. He presented his recently acquired Smellie's abridged edition of

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3278 Carson papers 3: 33. CPSP.

3279 Copy, University of California, Davis, Library. "One of three presentation copies [he] gave to his children." according to Stephen Foster. 7 July 1989, letter to J. Ewan, Ewan Coll.

3280 Unless otherwise specified, materials in this section are in Barton papers, APS. See Ewan, "Barton's Library" for present location of his books. Dr. Wm. James McNeven (1763–1844), Irish patriot, b. Galway Co., Ireland, studied in Prague and Vienna, then travelled, arriving in the United States in 1804. He earned his M.D. at Columbia College, and in 1808 he became Professor of Midwifery, in 1810 of Chemistry. He was a friend of Hosack and Mitchill and was elected to the APS in 1823. Gross, *Lives*; Kelly, *Cyclopedia*; Robbins, *Hosack*, passim; Edward Preble in *DAB*.

Buffon's *Natural History* (London, 1781, 2 vols.), "a very small present, I wish it were more deserving of your acceptance." Bartram in 1795 loaned the work to Alexander Wilson.

From Jefferson on 23 August 1793 came a note, "Th Jefferson presents his friendly compliments to Dr. Barton & being in the act of sending of his books to Virginia, takes the liberty of asking Dr. Barton the volumes lent him." Jefferson had been for some time settled on the banks of the Schuylkill River near Gray's ferry, "where he would always be very happy to see Dr. Barton, should his rides or walks lead him that way. His absence from town has scarcely given him an opportunity of seeing anybody in it." Barton marked the note as "Received Aug 26, 93." Barton was also invited to dinner "with a small party of friends" Friday, 30 August.[3281]

When John Davis visited Barton in 1795, he borrowed Ferdinand de Soto's work on his expedition to Florida to show to Belknap for considering republication. If Belknap approved, the Massachusetts Historical Society would publish an edition with Barton's notes—a plan that did not materialize.

Heckewelder, working in far-off communities in western Pennsylvania and Ohio, appreciated books loaned to him by his Philadelphia correspondent. On 14 February 1798 Barton requested the return of his *Indian Bible*,[3282] since he was working on his Indian vocabulary and was "anxious to extract some words, but I beg you not to send it until you have finished examination of it." Heckewelder returned it 13 March. Sometime after 14 March 1801 Barton's copy of Volney's *Tableau du Climat et Sol des États-Unis d'Amérique* (Paris, 1803) reached Heckewelder at Gnadenhütten, Ohio. After some study Heckewelder reported, 4 March 1805, "how erroneous he sometimes remarks [on the Indians]." Barton also lent MacKenzie's *Voyage from Montreal* (Philadelphia, 1802).

To Pursh while he was still at the "Woodlands" Barton lent Gmelin, *Caroli a Linne Systema Naturae*, ed. 13 (Leipzig, 1788–1793), Carver's *Travels*, Hugh's *Barbadoes*,[3283] and Walter, *Flora Caroliniana*. William Hamilton of the "Woodlands" and Barton lent each other books. On 21 December 1802 Hamilton wrote Barton:

> *I just now find that the vol: of Molina's Chile*[3284] *was left with my Mother on my going to Lancaster last summer, to be forwarded to you & that she forgot the direction. I now return it with many thanks for the loan of it & will be obliged to you to send by the bearer if convenient the books I some time ago lent you, as I have now an occasion for them.*

Meriwether Lewis carried a book of Barton's to the West Coast. Inscribed upon the cover of this volume, now in possession of the Library Company, Philadelphia:

> *Dr. Benjamin Smith Barton was so obliging to lend me this copy of Mons. Du Pratz's history of Louisiana in June 1803. It has been since conveyed by me to the Pacific Ocean through the interior of the Continent of North America on my late tour thither and is now returned to its proprietor by his friend and Obt. Svt. Meriwether Lewis.*

When Daniel Drake arrived for medical training but lacked funds to pay for all his classes and the Hospital Library fee, Barton let him have the use of his books, and let him attend his lectures. Though perhaps medical students did not remove books from Barton's library, many a pupil referred to material read in his books in conjunction with their experiments. Relatives

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3281 B. S. Barton, bound correspondence, f. 17, HSP.

3282 John Eliot, *The Holy Bible: containing the Old Testament and the New. Translated into the Indian Language* (Cambridge, Mass., 1663).

3283 Griffith Hughes, *The Natural History of Barbadoes* (London, 1750).

3284 Giovanni Ignazio Molina, *Saggio sull Storia Naturale del Chili* (Bologna, 1782).

also benefited. In a letter of 18 April 1806 he queried his brother Richard Peters Barton, "Have you recieved the remaining volumes of Edwards, and also the works of Clavigero...I did wish to have sent many other books. But I am so incessantly engaged that it often happens that I am unable to do what I am most anxious to do for friends." There were many other occasions when books were sent to the Virginia farm.

Lancaster relatives also received books on loan. In a letter to William Barton 18 April 1806 Barton wrote:

> *In one of your letters, you say Sister* [Esther Zantzinger] *requests to keep the copy of Armstrong on health, which I left at your house. I fear I never answered that letter. I beg Sister to accept of the little book. It should be hers, if it were a hundred times more valuable. Tell her, my vanity leads me to suppose, that she will not be displeased to be told the circumstance—tell her, that somewhat of my prosperity, and success in life, is owing to the reading of this charming poem. Armstrong advises me to 'read aloud.' Early in life, I read the poem, and followed the poet's advice. I have even continued to almost ever since. It has, I think, contributed something towards the invigoration of my chest, naturally feeble, as you well know; but I have gained still more by Armstrong's advice, I learned to read distinctly, and by degrees found my voice for lecturing, or reading, to large audiences. By the way, this last winter, I lectured to a class of 158 gentlemen.*

Thomas M. Randolph wrote Barton 25 October 1810:

> *I am waiting for the opportunity which my young friend & relation Mr. Mann Page would afford to forward my copy of Clayton according to your desire when Mr. Jefferson mentioned to me your late letter to him and his intention of forwarding the two volumes of Persoon to you immediately by the mail. The copy of Clayton goes in the same pacquet.*

Jefferson sent separately the two volumes of Persoon, *Synopsis Plantarum, seu Enchiridium Botanicum...* (Paris, 1805–1807, 2 vols.), each volume by a different post, lest there be any mishap. Meanwhile, Barton borrowed volume one of Persoon's *Enchiridium* and Muhlenberg requested its return 1 November. Barton returned it immediately, and so on 3 November Muhlenberg wrote Barton that he would be welcome to volume two. Muhlenberg had also requested the return of Josephus Aloysius Froelich's *De Gentiana Libellus* (Erlangen, 1796).

Christian Frederick Dencke (1775–1838), Moravian missionary, had been introduced to Barton by Heckewelder in a letter 12 April 1800. Dencke was going to accompany Heckewelder on a westward trip, "His talents & Turn appears to be directed towards Botany." Barton's concern for a scarce item not appreciated by Dencke is displayed in the letter from a thoughtless borrower, which with the book came home by way of Heckewelder and Muskingum, and were not received until 16 June 1812. One wonders what the "substitute, but a good system," better than *Systema Vegetabilium*, might have been.

> *Fairfield, Upper Canada Aprill 26 1811*
>
> *Sir,*
>
> *Today I rec'd a letter from a friend of mine from Pennsylvania informing me, that You wished me to return a book. my correspondent tells me: Mr. Heckewelder writes me: 'In a letter which I rec'd from Dr. Barton he says: The book which I lent Mr. D. several years ago, is the Systema Vegetablium of Linnaeus, published in Octavo. 1 Volume. It is a very valuable & scarce book, which I cannot any more procure, & therefore I should be very glad that Mr. D. would return it, by the first*

good conveyance, I have occasion for it, in my botanical pursuits.' This I do with great pleasure to return it; it is true it is the only botanical book I have here, this Edition of Murray[3285]*—but I dont think much of it, & besides that I understand by my correspondent, that in order I should not lack in my botanical pursuits, wanting of a book—they would endeavour to send me not only a substitute, but a good system. Tho in the mean time, I shall be without.*

However Dear Sir! I am much obliged to You for the loan of said book & am sorry that I kept You so long out of possession of it. From Mr. Heckewelder I never recd. a line on the subject, perhaps that letter was lost. You'll pardon me I hope for my negligence. Indeed had I known, that You so very highly esteemed said book, I should not have taken it along—for I had a copy myself—which I borrowed to Mr. Thomas Horsfield, with the intention to leave it with You, when he returned—& that was the reason that I took the other copy along.

...I shall sent the book directly to Muskingum—& do hope You may safely receive it and soon—it will go safely to Muskingum. I have the honor to remain Your obedient humble Sert. Christn. Fr.: Denke.

On 27 January 1814, Heckewelder, now in Bethlehem, Pennsylvania, wrote:

P.S. When I was last in Philada. you kindly intended to furnish me with a copy of Your latest Edition of 'New Views' which however did not come to our recollection at parting. I would fairly return the Book again, after comparing Words therein with such as are to be met with in Lewis & Clark's & McKenzies Travels—I much question if ever I have seen Your latest edition, which I think you told me was much improved—I will be very thankful, if You could whenever convenient, lodge it at Mr. [Godfrey] *Hayes who could see it forwarded to me by a safe private conveyance.*

Since Heckewelder had contributed new information, he was particularly anxious to see how it had been incorporated. Had he misunderstood? The "latest edition of New Views" was still being put to press, and never did see publication.

On 15 April Barton wrote Jefferson inquiring of the safe arrival of Persoon's *Enchiridium*. In March, Metcalfe, perhaps a pupil, returned Barton's copy of Andrew Fyfe, *A Compendious System of Anatomy* (Philadelphia, 1805). On 24 August 1809 Barton had requested of Rush the return of the small volume of epitaphs, &c. lent him last spring—he will be welcome to use it again any time. To Cutler he had loaned his three volumes of Aiton, *Hortus Kewensis* (London, 1789, 3 vols.), and requested him to keep them until finished with them.

In these ways one book-lover helped alleviate the shortage of scientific books in new America, and was aided through the generosity of others.

3285 *Systema Vegetabilium*, ed. 14 (Göttingen, 1784).

Chapter XXVIII

Returning to Europe

"Tis not in mortals to command success, but we'll do more—deserve it."
—Joseph Addison, *Cato.*

Preparations

A good part of 1814 was devoted to careful planning for a trip to Europe, which Barton hoped would not only benefit his ailing body but would enable him to meet friends and the famous continental specialists with whom he had developed correspondence and exchanges of specimens and books, not only for himself but for the American Philosophical Society. Now that he was successfully established as naturalist, physician, and professor—he now held the most prominent place in the medical school as Professor of the Theory and Practice of Medicine—he could meet with confidence professors of European universities. He would also redeem his reputation, sullied during his student days at Edinburgh. His monetary debt may all have been met in 1810. Ever hoping for improved health—after all he had recovered to a degree after each of his journeys, so there was always hope—he may also have hoped for encouragement and patronage to complete publication of his long-contemplated major works: his Flora, Zoology, and History of North American Indians.

Early in the year he consulted his longtime friend Rev. Nicholas Collin, who returned him advice on the safest way to post copies of his published works to Sweden:

> *Feb. 8 1814*
>
> *Dear Sir*
>
> *When I came home yesterday, I revewed the respective addresses in Gottenburg, which our literary correspondents had procured, by my request, as that place will allways be much visited by our vessels, being the nearest, and next* [to] *Stockholm in commercial importance. These addresses are three; and each of them can be used. The Librarian of the Uppsala University has one—The Royal Socy. of which You are a member, and Prof. Swartz, have another, and Sparrman has that gentleman, the Rd. Mr. Ritterberg, master of arts, and Rector Scholae, Cor*[responding] *Rector of an Academy of whose name I gave you. Swartz has, in particular, Mr. C. H. Tranchell, Secretary of the East Indian Company. He is probably alive still, and a character well known, as that Commercial Company is very respectable. It will therefore be best to request, that your packet may, in case of no direct opportunity to Sweden, be left with this gentleman, C. H. Tranchell, Secret. of the East. Ind. Company, and, in case of his demise, to Ritterberg. As Tranchell is the particular commissioner of the Society, I would mention him first.*
>
> *It is allways the safest to take all the best measures, when we have the trouble of sending valuable things to distant countries.*

As to the Swed. Roy. Society, it is, by account of Swartz in good financial situation: having a house of 3 stories, with 9 rooms in each, a library of ten thousand volumes, et[c]. I am Dear Sir, Your friend and very hble. St. N. Collin.[3286]

Barton kept the record that:

July 3, 1814,

I have this day put into the hands of Mr Denke, two copies of Memoirs of Rittenhouse, in boards, in which I have written 'For the Library of the University of Oxford, from Professor Barton. To the care of Sir Joseph Banks. Philadelphia, July 3d 1814.' & the same exactly in the other volume, except 'For the Library of the University of Cambridge.'

1. I have sent to Denmark by Mr. Pedersen, two copies of Life of D. Rittenhouse by W. B. 2. two copies of my Fragments stitched. 3. One copy, in handsome calf, of my edition of Cullen's Mat. Medica in 2 vols.[3287]

On 10 July with no mention of his planned trip, Barton wrote to Lacépède announcing his "Mammals," and sending two plates intended for his "Natural History of the American Indians."[3288] Mr. Brown, printer, had received a note from Barton dated 7 March 1814, about which publication it is uncertain, with the following instructions:

I wish to have exactly 30 copies on the fine paper. & 400 on the common all to be done in the same manner you can—Be so good as to preserve for me all the proofs & revise. B. S. Barton. Remember that the fine copies are to be in quarto.[3289]

In an undated memoir to Mr. Brown, printer of his *Memoir concerning various Species of Serpents*, Barton wrote:

I send you all the paper I have of the inferior kind, viz 151 sheets, every one good. In order that I may have same uniform copies, it will be proper to print on this paper only a certain number of copies, deciding what you have with what I now send for 3 forms, including the form of which I hold the Revise.

tell me how much you have including that now sent I will send the best substitute I have. I believe I shall be able to get the fine paper: but it will be necessary that I know how much will be wanting. I need not say how necessary it is to preserve the paper from all waste Yours &c. BSB

Please to continue to pay every attention to the press-work.

[On the back of this copy for himself:]

Wanting 72 sheets-fine—to complete three forms—We have now of the inferior kind sufficient to give 200 copies on three forms.

He wrote again:

3286 Barton papers, APS.

3287 Barton, miscellaneous papers, APS.

3288 For the letter see "Lacépède" in our Chapter XII, Continental and Latin American Correspondents.

3289 Barton papers, APS. Barton's copy.

You may now, as far as you please, put the form to press. I beg that great attention may be paid to the press-work. & the more so, as I intend to reprint some of the former sheets, done by another printer; they not being done to my satisfaction. You have the paper in your possession. It is important to me, that the work be done with as much privacy as possible. Respectfully, BSB

[Then he added to his copy of the note:] *Oct. 14, 1814 Sent to Mr. Brown, for the very last few of my memoir on fascination, 33 sheets, fine, all good & five quires each 25 sheets, all good, common I mean the few with title page, explanation, & 2 of 73, 74, 75, 76.*

[On the verso of page proofs Barton wrote:] *I beg the printer to attend to all corrections. I am not certain that it is necessary that I should see the proof again, even for a few minutes.*

That paper out of the way, another memorandum tells of his revision of another paper. On 13 December 1814 it reads:

I have today sent to Mr. Isaiah Thomas the prime copy with ms. of my paper on the Bite of the Crotalus, desiring him to reprint it. It is my design, besides notes at the bottom, to add a large mass of experiments & observations on this curious subject. The whole to be done in the same prose &c. as the late new edition of my memoir on fascination.[3290] [This paper, however, was not republished.]

On 18 July Barton had acknowledged his election to the American Antiquarian Society in Worcester, Massachusetts, and sent a copy of his *New Views*. He wrote of his "extended edition, in press." This surely applied to what appeared as *Archaeologiae Americanae*, which was nearing publication. "Oct. 15, 1814. I this day sent the Binder near Hyde's the first 24 copies of my work on Elephantine & the bones to be put up in paper: all common paper copies: same day six copies came home from this Binder. All have been sent home." In another note "Disposition of my work in Archaeologia. I put up a package directed to the Royal Society of Edinburgh containing copies of the work, octavo size, upon the yellow covers of which I wrote as follows, viz. 'For Professor Playfair, with the author's high respects' one copy. 'For the Wernerian Society, with the author's high respects' one copy. 'For Professor Jameson [ibid.], For the Royal Society of Edinburgh [ibid.],'" and in another note: "Oct. 1814 I sent one copy of the above work, on the yellow cover of which I wrote 'for Dr. Albers, from his friend, the author.' Outside, I directed the package thus 'For Dr. Albers, Bremen.—no other writing within.'"[3291]

In his dedication of *Archaeologiae Americanae* to John Mason Good (1764-1827), surgeon with wide literary interests, he wrote:

It is my object to collect materials for a history of these extinct animals and vegetables, the remains of impressions of which are daily discovered in the rapid progress of American population and improvement. I can hardly flatter myself that my time, devoted as it must be to other, and to me more important pursuits, will ever permit me to prosecute these archaeological inquiries very far.

Then in the preface Barton wrote:

3290 Barton papers, APS.

3291 Barton, miscellaneous papers, APS.

> *I at one time, indeed, for some years together, flattered myself that I should have found liesure to have devoted a considerable portion of my life to the study of organic geology. But my recent removal, in consequence of the death of Dr. Benjamin Rush, to a more practical chair in the University of Pennsylvania, and a determination to devote a principal portion of the remainder of my days to the cultivation of practical medicine, now teach me that it is too late to attempt any very extensive, and especially very systematic views of these among the most difficult portions of natural history.*[3292]

Only part one, on fossil elephants[3293] (*Mastodon americanum* and *Mammuthus*), appeared. Barton again was plotting out the fields he hoped to claim as his own. Perhaps he was emphasizing to himself his will to live to complete projects planned. The German paleontologist Adrian Camper addressed his criticism of the work to Wistar, regretting that Wistar had not played a more influential primary role in fossil description.[3294]

On 8 October the College Royal de Sanité, Stockholm, elected Barton an honorary member.[3295] That may have offset the bitterness he undoubtedly felt, if he had learned that Pursh's *Flora* had appeared in London with the descriptions of the Lewis and Clark plants and whatever new species Pursh had collected at Barton's expense. Pursh had acknowledged that Barton had helped make his trips in America possible, but had not mentioned his days in Barton's herbarium and library. Pursh had been successful in finding a patron in England so that, unencumbered by any other professional duties, he could devote his time to the *Flora*. How often had Barton longed for such a patron. On 10 October Muhlenberg complained to Elliott that Persoon had written him for an opinion of the "first sheets of [Barton's] Flora Virginica," and wished to have the opinion of American botanists, none of whom had seen any of the printed text.[3296]

On 23 November Jefferson resigned the presidency of the American Philosophical Society. He had been wanting to for some time, so he wrote to Secretary Robert M. Patterson, but had stayed on at Patterson's urgent request. Jefferson wrote 27 December to Corrêa da Serra, who was now living in Philadelphia, that he had resigned, "not waiting your further information as to the settlement of the general opinion on a successor, without schism. I did it because the term of election was too near to admit of further delay."[3297] Jefferson had delayed resigning knowing too well the ambitions, particularly of his longtime vice-president and naturalist, Benjamin Smith Barton. On 30 November a committee requested the return of the books Barton had borrowed from the American Philosophical Society library. He made a list of articles "to take to Europe," and a three-page list of "Books to procure in Europe." This may have been the same Christmas day that he began to collect letters of introduction to Europeans, writing to his longtime Philadelphia friend, the Honourable Adam Seybert, trained at the École de Mines in Paris, and now in Washington as a member of Congress:

> *Dear Sir,*
>
> *A few days since, I learned, that our Dr. Blumenbach is living. I had a letter from thence, mentioning the circumstance. But the professor has met with a great loss in the death of his son (whom you may, possibly, have known), who was killed, in the service, of the English, at Toulouse even after the allies had gotten into Paris.*

3292 As reported in Barton, *Elements* (1836), 22.
3293 [*Mammuthus*, the Woolly Mammoth.]
3294 A. G. Camper, Franker, 2 June 1815, and 20 June 1816, to Wistar. Wistar letters, nos. 30 and 31, APS.
3295 Barton papers, APS.
3296 HUH. Graustein, *Nuttall*, 431.
3297 Davis, "Corrêa," 135.

What are the prospects of peace? I wish to hear from you on this subject. Should there be peace, or a considerable probability of it, I shall sail for France, in March, as early as possible. I need not say how useful to me will be a letter to Mr. [William Harris] *Crawford* [minister to France]*; or any other letters you may think proper to give me.—You will, of course, write to Blumenbach, whom I shall visit. I have written, on the subject of my tour, to Mr.* [George Mifflin] *Dallas* [secretary to Gallatin with whom he had visited Russia]. *It is likely that he will show you my letter. I have requested letters, to any of our public assigned in France, Holland, &c. I shall also write to Mr. Jefferson; for every letter will be useful to me.*

Do let me hear from you soon, in answer to this; though your foreign letters will not be wanted before the middle of February. Meanwhile, I say as little as possible about my voyage. With much respect, I remain, dear sir, Your friend, etc.

B. S. Barton
exact copy[3298]

Muhlenberg, so often critical of what he considered Barton's stinginess with his books, specimens, and time, wrote to Baldwin on 20 January 1815: "Probably our Dr. B. S. Barton goes next March, and intends to return in November, from Germany, France, and England,—with the riches of the old world, and all the information he can collect." Baldwin, who may have received no answer to the letter of conciliation he had written Barton, queried Muhlenberg who replied 11 May 1815, "He is now gone to France. May success attend him! and may he return to enrich botany, for the lovers of science in general."[3299] But Muhlenberg also reported that Barton was growing careless and had neglected to forward to him Persoon's "nomenclature" of cryptogamous plants, which Persoon had entrusted to Barton, "as several others, under cover to the Doctor." Yet, in spite of having assumed too many obligations, and that he would be away a good part of the year, on 6 January 1815, Barton was again elected a vice-president of the American Philosophical Society with Robert Patterson and Jonathan Williams. Caspar Wistar succeeded Jefferson as president. Curators were Zaccheus Collins, Joseph Cloud, and William Hambell Jr.[3300] Barton also attended the February meeting, and his last on 17 March when it was "Resolved," that a Seventh Committee be added to the Six...a "Committee of History, Moral Science, and General Literature,"[3301] the birth of the Historical Society of Pennsylvania.

The Linnaean Society of New England, newly established with former pupil Jacob Bigelow as Corresponding Secretary and Barton's longtime friend John Davis as President, informed him 27 January that on 21 January 1815 he has been elected an honorary member.[3302] Welcome news came on 9 February 1815, when John Vaughan informed Barton that he had been successful in getting him relieved of the note for $1,200 that he had endorsed for Priestley years before.[3303]

DeWitt Clinton, Governor of New York, had sent Barton a copy of a talk he had presented before the Literary and Philosophical Society of New York 14 May 1814. Typically Barton must needs comment on it, and enclose some of his own papers. He will be searching the bookshops for early American works for another of his planned projects, a history of early America, he writes. The pressures of the day led him to involve an amanuensis, his wife Mary(?), to prepare his "exact copy" of his letter to:

3298 Barton papers, APS.
3299 Darlington, *Baldwin*, 160, 171.
3300 APS, "Minutes," 451.
3301 APS, "Minutes," 453.
3302 Barton papers, APS.
3303 Barton papers, APS.

The Honourable de Witt Clinton, Esq., 15 February 1815

Sir,

I have received your 'Introductory discourse,' and I have seen the work with much Satisfaction—To a very small matter, in p. 45, let me call your attention. 'I have seen (you say) that beautiful bird, the Loxia cardinalis,[3304] *in our western country, and I believe it never appears here.' Now, this Loxia, Sir, is very common in Eastern as well as Western Pennsylvania; and it is very common in N. Jersey, from whence our markets are pretty regularly supplied with it. I am sorry to add, often with the dead bird. We catch and shoot this bird in the immediate vicinity of Philadelphia. I know it to inhabit E. N. Jersey. You must, I think, have it not remote from N. York. In return for your valuable present, I send you a few small tracts. The two papers on the Opossum, the tract on the rattle-snake, the paper on the* [Tayè?], *and the Archaeologia, I wish to be considered private in your hands, for the present. Please to present, in my name, to Your L*[iterary] *and P*[hilosophical] *Society, the copy of the 'Discourse.' The time, I hope, is not distant, when I shall be able to send you something more worthy of your notice; particularly my 'History of the N. Amer. mammalia,' and a work, much of which is printed off, on our 'Indians,' in two vols. octavo.*

In consequence of the greatly impaired state of my health, I am preparing for a voyage to Europe: especially to the South of France and Italy. While in those countries I shall avail myself of every opportunity of collecting such rare works as relate to the history of the new World: and the more so, as I long contemplated a work, of some extent, relative to the early history of South and North America.

Wishing your new Society every success, and you, Sir, every happiness, I remain with great respect, your obedient servant, &c.

Benjamin Smith Barton[3305]

On the 28th he wrote Clinton again, this time on the orchid *Calypso borealis* and its Sino-American distribution, a subject close to his heart. Clinton wrote in his *Discourse*, 56, of his "having been often instructed by other writings of this distinguished author."

There were also the inevitable intrusions when time seemed most precious. Henry McMurtrie, M.D., former pupil who taught anatomy and physiology in a Philadelphia high school, requested the favor of a review of his current manuscript:

Montroville, 18 February 1815

Sir

I have been for some past engaged in Translating from the French the Memoirs, of Monsrs. P-J Pettetan[3306] *The high Character this Gentleman deservedly enjoys, Both at home & abroad, is doubtless known to You— Were I not assured, of the Many weighty & important vocations with which, you are engaged, I should have, transmitted the manuscript to You for your opinion. But, Fearful of intruding upon your so precious time, I have withheld it. Will you Sir, add me the favor, More, to the Many I have already received, from You, By Giving Me your opinion, as to the utility of Such a Translation. The Memoirs upon Bronchotomy, & internal*

3304 [The Northern Cardinal, *Cardinalis cardinalis* L., 1758. AOU. AUD.]

3305 Barton papers, APS. His copy.

3306 John Louis Petit (1674–1750), leading French surgeon, is probably the gentleman referred to. Garrison, *Hist. Med.* 341, 352, 830.

Aneurisms, I have Completed, that upon External Aneurisms, will also be ready in a few days. I understand you are going to Europe. Permit me, Sir, to tender you My Sincerest wishes for Your Safety, & health, & that your Voyage May be the means of preserving to our Country, one of its Brightest, Medical Literary Characters, Will always be the prayer of Your obd. Servt.

Henry McMurtrie[3307]

[addressed] *present.*

What more influential person could Barton have references from than the former president of the United States, longtime president of the American Philosophical Society, for whom, over the years as a vice-president, he had served in the chair, and with whom he had shared interests, especially in American Indian Languages. On 19 February 1815 he wrote Jefferson:

In about 3 weeks, perhaps less, I shall sail for Europe. I shall visit France, the borders at least of Italy, & England (for a short time) on my return. My first and greatest object is the recovery of my health, which has suffered most severely this winter: indeed, a few days ago I was so ill that I hardly hoped to be able to take the voyage. Besides my health, I have some favorite schemes in science in view. I shall not go wholly a stranger—Can I be of any service to you in Europe?[3308]

Before he received this letter, since the mail had been delayed, Jefferson wrote on 26 February to request the return of his copy of Persoon, *Synopsis Plantarum, seu Enchiridium Botanicum...* (Paris, 1805–1807, 2 vols.), which Barton had borrowed. The reason Jefferson gave:

Congress having concluded to replace by my library the one they lost by British vandalism, it is now become their property and of course my duty to collect and put in place whatever stood in the catalogue by which they purchased. This renders it necessary for me to request the return of Persoon's Botanical work of which you asked the use some time ago. I am in hopes you have been able to make it answer the purposes for which you wished its use. If well enveloped in strong paper it will come safely by mail.[3309]

When he sent the duodecimo volumes on loan to Barton, he had informed him, tongue in cheek, that he was sending each volume separately so as "not to overburden the mails"! More probably it was to safeguard against total loss. Jefferson answered Barton's letter from Monticello, 7 March:

...I am sorry to learn that the state of your health is such as to oblige you to seek its repair in other countries, and with pleasure furnish you such letters as may assist in alleviating your peregrinations. Supposing the National Museum, and National Gardens would be the most interesting objects for you, I enclose a letter for the Count de Lacepede, at the head of the former, and M. Thouin who has the direction of the latter. I have not

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3307 Barton papers, APS.

3308 A copy. Barton papers, APS.

3309 Lipscomb & Bergh, *Jefferson*, 223.

added letters for Dupont and Humboldt, because I am sure you are personally acquainted with them...Mr. Crawford, even without a letter, would have been your patron ex officio.

He also enclosed letters to Mr. Pictet of Geneva, to Dr. Gouan of Montpellier "who has written on Botany and Medicine," to "my old friend Cathalan in Marseilles, but a merchant," and to Mr. Fabbroni in Florence "well known to the men of science of Europe," to Mazzei of Pisa "if alive, for he is upwards of 80, a furious republican, affectionately attached to America," author of "Recherches politiques et historiques des E. U. Amerique,"[3310] and to Thomas Appleton in Leghorn.[3311] Then Jefferson adds a bit of timely advice, applicable also in our day of freeways and major highways for any tourist wishing really to see our country:

When you go from one place to another at a distance, never think of the direct road, which generally leads on the ridges and barrenest parts between river and river, but make directly for a river and take the road along that, which always leads thr' the richest country, the best cultivated & most populous. Thus in going from Paris to Marseilles ascend the Seine to Dijon...If you should be at Leisure to write from any of your stations, I shall always be happy to receive a line from you...

Also that in case Barton should go as far as Rome, he added a letter to Cardinal Dugnoni, "an excellent man" whom he had known in Paris.[3312]

In 1818 Jefferson wrote Dugnoni that he "was happy in the opportunity he [Barton] furnished me of presenting myself to your recollection," but that he doubted Barton had ever reached Rome.[3313]

To His Excellency William Harris Crawford, Jefferson wrote:

...this will be handed you by my friend Dr. Barton, one of the Vice-presidents of the American Philosophical Society, a professor in the University of Philadelphia and distinguished by his writings in the Physical sciences...If not personally known to you, I am sure he is sufficiently so by character, to ensure to him all the good offices and civilities you will be so kind as to shew him, and he will be especially thankful for any introductions you can procure him into the literary circles of Paris...[3314]

To M. Stephen Cathalan he wrote:

Monticello, March 6, 1815

My good and much esteemed friend

I am much gratified by the opportunity of recalling myself to your recollection by this letter which will be handed you by my friend Doctor Barton...he tries a sea-voyage into air of Europe for the benefit of his health, and will surely visit Marseilles in his route. receive him as my friend and add this to former testimonies that my respect for you has been

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3310 Filippo Mazzei (1730–1816), *Recherches historiques et politiques sur les États-Unis de l'Amérique Septentrionale: où l'on traite des établissemens des treize colonies, de leurs rapports & de leurs dissentions avec la Grande-Bretagne* (Paris, 1788).

3311 Marc-Auguste Pictet (1752–1825), naturalist and philosopher; Antoine Gouan (1733–1821), French botanist; Giovanni Valentine Matteo Fabbroni (1752–1822), naturalist; Philip Mazzei (1730–1816), physician and horticulturist.

3312 T. P. Barton collection, *Boston Publ. Libr. Bull.* 18 (1943): 160.

3313 Lipscomb & Bergh, *Jefferson*, 19: 254–255. Barton did not reach Italy.

3314 T. P. Barton collection, *Boston Publ. Libr. Bull.* 18 (1943): 161.

thought worthy of a friendly reciprocation. Accept the assurance of my constant and sincere esteem and respect.

Th. Jefferson[3315]

Filippi (Philip) Mazzei (1739–1816), born in Tuscany, educated as a physician, became interested in viticulture. He had met Jefferson in Paris and was persuaded to bring his knowledge of grape-growing and Italian architecture to Virginia. He spent the years 1773–1779 as a cherished neighbor of Jefferson, then returned to Europe. Jefferson provided an introduction for Barton to carry:

Monticello Mar. 6. 15

Dear Sir

My friend Dr. Barton proposing for the benefit of his health a voyage across the Atlantic, and a trial of the air of Europe, intends to visit Florence and Pisa in the course of his travels. he is a Vice president of the American Philosophical Society, Professor of Natural History, Botany, Materia Medica, and of the Institutes and Clinical practice of Medicine in the University of Philadelphia. knowing your devotion to this, your, as well as our country, and the pleasure with which you recieve all it's citizens, I have requested Dr. Barton, to deliver you this letter himself. he will be able to communicate to you the events of our late war, and the present state of things here in all the details in which I know you are ever anxious to learn. I wrote you on the 29th of Dec. 1813, an interesting letter on your affairs here, which I hope you recieved and shall very soon write you another, in the meantime, I am anxious to hear from you. be so good as to receive Dr. Barton as my friend, procure him such literary acquaintances, as you may conveniently and he may wish and be assured of my constant and affectionate friendship.

Th Jefferson

Mr. Mazzei.[3316]

To "Addamo Fabbroni" in Florence he wrote the same day:

I have thought I should render a service acceptable to yourself as well as to him, and perhaps to science itself, by procuring a personal acquaintance between two of her sons laboring in their different hemispheres for the instruction of man.[3317]

David Hosack in writing to Sir James Edward Smith in London 17 March commented that "No man is more rich in information relative to the natural history of our country than Barton."

Archibald Bruce also responded to Barton's request 25 March 1815, enclosing a letter to an unnamed acquaintance:

I shall beg you to deliver the inclosed altho I hardly think it necessary that you should take any letters of introduction as your acquaintance with the Literati of Europe has been so long and so well established that the

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3315 Barton papers, APS.

3316 Joseph M. Maddalena, *Cat. no. 1, Profiles in History* (Los Angeles, n.d.); Betts, *Jefferson's Garden Book*, 62–63, and passim; *Thomas Jefferson: Writings: Autobiography; A summary View...*, Merrill D. Peterson, ed. (New York, 1984), 1035–1037; Richard C. Garlick in *DAB*.

3317 ANSP.

bare mention of your name will be sufficient to insure you an agreeable reception.[3318]

Heckewelder also yielded warmly to Barton's request, both for introduction to European friends, and for what specimens he could obtain for Barton to take. He and Kampman, mentioned in his letter, had outlived European contacts, and anyway, he assured Barton, Barton's name was so well known, as was his own. We identify with some certainty a few of the folk Heckewelder mentions in his letter[3319]—as well as the river Monakosy, which flows through Bethlehem. Heckewelder's second daughter, Anna Salome (Sally) married a Joseph Rice. Mr. Smith was possibly Thomas Smith, British soldier during the Revolutionary War, assistant to James McKee, Indian agent, and later a prominent Detroit merchant. Ebenezer Allen, soldier, trader, Indian agent, who later went to Ontario, Canada, is possibly referred to. Wolle was a member of a Moravian family settled in Bethlehem. Despite the fact that Barton had not yet put into print all the information Heckewelder had furnished him, Heckewelder still held his longtime friend in high esteem:

Bethlehem, 29th March 1815

My dear Sir,

Your favr. of 21 st. inst. was recieved by me on the 26th & by which I see that in a few days You will embark for Europe—kindly offering to take charge of any Letters, any of us might have to send—On making enquiry—I am informed that last Week all Letters for Europe, written at this place, were already forwarded to a Person in Phila. for dispatch. Dr. Kampman having left Europe 40 Years since, has no one correspondent left living, otherwise he gladly would have written—Dr. Fryday, who obligingly put up the Trouts I had promised for You, says, that Dr. Bartons Name is so generally known all over Germany especially at all the Universitys, that he needs no further recommendation. He put the Trouts alive in the Spirits, but says the Dr. will have to put fresh Spirits on them, when he recieves them—It was fortunate Mr. Rice had a few left in his Trout house, otherwise I could not have procured a specimen on account of the muddyness of the Monakosy, occasioned by the Rains, at this present time—

Mr. Smith says, he has parted with such few insects he had—I think he said to an Englishman. he was sorry, he did not know it earlier, when he might have served you with a few, tho he is not sure they would have been rare. I do not recollect a single individual in Europe, at this time living, with whom I am acquainted—my Name however is known throughout in all our Congregation both in England & Germany, by my having been for so many Years among the North american Indians—

Your friends at this place—& who are not few—all unite in wishing you a pleasant Voyage both going & returning. & I am particularly requested to mention this—with best respects from Dr. Kampman and Mssers Gill & Allen—Mr Wolle at the Tavern, Mr. Smith, from my whole family, & their connections in all which I heartily join—nay more—my Prayers, for the restoration of Your health & safe return, will, during your absence daily be renewed. Adieu my dear friend & believe me with sincere affection Yours &c

Jno Heckewelder

3318 Barton papers, APS.

3319 Wallace, *Heckewelder*, 231, 366, 386, 395, 438. Barton papers, APS.

P.S. I had almost omitted mentioning that the Trout for You is forward by Dr. Fryday of this place, to the care of his Son at Mr. John Jordans 3d Street, near the Corner of Race or Sassafras St.—We thought this the safest way of conveyance, as no private Opportunity offered, & I feared, if not directed in this way, as the driver is acquainted with Mr. Fryday junr., it might miscarry—J.H.[3320]

In the scrawl of a hurried and ill person, almost illegible, Barton made the record of his search for further European contacts through the widow of Joel Barlow, American Minister to France. His letter, dated 20 February 1815, reads:

Madam, In about three weeks, I shall sail for France. The principal object of my voyage, is the recovery or improvement of my health, which has been pretty broken and impaired during this winter. I hope to pass several months in different parts of France; and I am not without some hopes of extending my tour into Italy, at least as far as Florence.

The object of this letter, Madam, is to ask of you, letters of introduction and civility to any of your literary friends or the frds. of your late highly estimable Mr. Barlowe. For instance, I should be glad to have a letter to the abbe Gregoire: in short, however, to any of your acquaintances of the description I have mentioned. Although my principal object is what I have stated I have some schemes of science in view, which have long been dear to me, such as the collection of materials for the early part of American History.—But it is not necessary that I should trouble you with my views or wishes on this subject. Can I Madam, during my residence in Paris, or in any other parts of Europe, be of use to you, in any way? If I can do command my services. You are not ignorant of the friendly nature of the intercourse which existed between Mr. Barlowe and myself. I sincerely valued him for his great and wise talents, and worth. & of those whom he left in the United States, there were few, I believe, who more deplored, and certain were to deplore, the heavy loss which his country sustained in the death of your excellent husband, than Dear Madam, Your obliged servant & sincere friend, &c. Benjamin Smith Barton Philadelphia, Feb. 20, 1815.

Paid. Mrs. Barlowe, To the particular care of Robert Fulton Esq. New York. exact copy.[3321]

No answer has been found among Barton's *reliquiae*. The Abbé referred to was Henri Gregoire (1750–1831), Bishop of Blois, French revolutionary who advocated the liberation of the Jews.[3322] Jefferson had met him in Paris.

In "March 1815 Mr. Metcalfe[3323] returned [Andrew] Fyfe's anatomy."[3324] This was probably the Philadelphia edition by Dobson in 1805. From this "wretched work" lecturers read on muscles to London pupils. A last minute request came from William Renshaw 23 March for letters of introduction to Madison and Monroe for Benjamin Renshaw, twenty-four, who

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3320 Barton papers, APS.

3321 Barton papers, APS. On Joel Barlow see Chap. II, fn. 5.

3322 Jean Chretien Ferdinand, *Nouvelle Biographie (Universelle) Générale* (Paris, 1853–1866); *Encyclopaedia Judaica* (Jerusalem, 1971–1972) 7: 918–191, portrait.

3323 Samuel Lytner Metcalfe (1798–1856). Drake, *Dictionary*; *Catalogue of the Transylvania University Medical Library* (Lexington, Ky., 1987), passim; Lyman C. Newell in *DAB*.

3324 Garrison, *Hist. Med.*, 767. Fyfe's work not found for Ewan, "Barton's Library."

would like to go as consul to the Canary Islands.[3325] Not until 14 March 1815 had Barton received the letter of August 1812 from Tilesius requesting the return of his drawings.

The financial wherewithal for such a trip as Barton planned necessitated a loan, and on 5 April 1815 came a note from Simon Gratz that an installment of ten dollars for repayment "is called" by Schuylkill Bank payable on 6 May next, and another ten dollars later.

With what may have been his last letter to Jefferson, Barton enclosed his recent publications, and inquired of the safe return of Persoon's *Enchiridium*. His letter postmarked 15 April 1815 to Jefferson at Monticello reads:

> *I beg your acceptance of a few small tracts in natural history. They may amuse you and our friend Mr. Randolph in an hour of leisure. Sickness stopped me short in the progress of my publication of several other and more important essays, &c. These with the return of my health, I shall yet give to the public. The first number of my Archaeologia may, possibly, be of use to you: the subsequent numbers will, I trust, be acceptable to the public.*
>
> *I shall be very anxious to learn that Persoon has come safe.*
>
> *I shall take great pleasure and pride in writing to you from Europe.*[3326]

Barton spoke from his heart of his love and his pride in his profession and as a teacher of medical pupils. His last lecture in early April was:

> *I have met you to bid you an affectionate adieu...Life is short: & the life of a physician, it has been observed, is especially so. All of our destiny is uncertain. Should I never again meet you within these walls, where I have passed some of the happiest, & I confidently trust, the most useful & dedicated hours of my life, I trust that you will at least keep in remembrance the zeal & good wishes of your professor. I have always in my intercourse with mankind calculated largely upon the kindness, the gratitude & forgiveness of young men: of men at your time of life, engaged in the most honourable & the most useful of human pursuits. In the foreign climes whither I am about to retire for the improvement, if not the restoration of my health; I shall incessantly think of you: of this school of Philadelphia, to whose respect & reputation I have endeavoured to contribute my mite. Oppressed, & worn away by sickness, the love of science does not yet forsake me: & in the ancient schools of wisdom with which Europe abounds; in my intercourse with the learned men of that portion of the earth, I may hope to collect something not unworthy of your attention; something not unworthy of every true friend to my native country; for the entertainment & instruction of my class. If my life be spared, I shall meet you the month of November next. In the meanwhile, I bid you adieu.*[3327]

Convalescent Tour of Europe in 1815

About 15 April Barton sailed with his young son, Pennant, for France and Paris. The air was still cold and bracing, nevertheless once they had gotten their sea legs, and Barton had relaxed from the struggles of preparation, if relaxation were possible for an ill person on a rolling sailing-ship (Figure 11), they surely spent some time together on deck searching for

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3325 Barton papers, APS.
3326 HSP.
3327 Barton papers, APS.

white whales and gannets. For this voyage unfortunately we have no journal to give us an inkling of how Barton amused his young companion or of the aid that on so many occasions Pennant was called upon to give. Had Mary carefully counseled the prospective twelve-year-old traveler of the necessity of keeping up his spirits in spite of adversity, and of being helpful and patient? Fortunately he was gifted with a commendable personality. There can be no doubt that once in Paris, and throughout their days in London, Barton stimulated Pennant's interest in book shops, and each searched his own quarry in his own field of interest. Was this trip with his father the inception of Pennant's amassing the fine library of the works of Shakespeare? He had, of course, grown up in a family of book collectors. His Grandfather Penington had had a fine library, and an uncle or cousin, a book shop. Pennant was easy prey to a compulsion he would eventually have the good fortune to indulge without stint.

Barton's most worthwhile visit in Paris was with Georges Cuvier, famous zoologist and paleontologist. One subject of great interest was Barton's *Account of Siren lacertina*, and after a meeting Barton wrote a letter on the animal with some additional notes to Cuvier, notes that were to have been sent him, but seem not to have been. Indeed, besides lively discussions and inspiring conversations about the animal kingdom, Cuvier aided Barton in material ways, since he had become ill and for a time was confined to bed. Was it solely in admiration for this scientist, or also that he felt a debt of gratitude for concern and consolation during an attack of "hydrothorax," or gout, that he gratefully willed to Cuvier all of his fossils, drawings and descriptions of mammals, and drawings of the heads of Indians? Barton seems to have stayed at Hôtel de Wagram, Rue de la Paix, since on 16 July Charles Athanase, Baron Walckenaer (1771–1852),[3328] addressed a three-page letter to him at that address. This letter, with its list of Italian titles of works pertaining to the Americas, did not reach Barton before he left for England, and it was sent to the American Philosophical Society, where it is preserved among its manuscripts.

While on the continent Barton contacted J. A. Albers in Bremen, who responded 18 July 1815, recommending Dr. Hueve, who had agreed to procure medical supplies for him. Professor Karl Mertens (1764–1831), botanist at Bremen, would supply plants, and Professor Samuel Thomas Sömmering (1755–1830) anatomist at Munich, had sent his treatise on the fossil crocodile.[3329]

Another letter that may have not reached Barton was written by Dietrich Brandis (d. 1824?), who wrote a laudatory announcement in Latin, dated 10 July 1815 in Copenhagen, that on the recommendation of the illustrious physician, Dr. John Herholdt (1764–1826), Barton was to be honored by Danish medics with membership in the *Societas Medica Hafniensis*. The Society would appreciate Barton's approval. Thomas Pennant Barton treasured the document.[3330]

Beyond that there is little record among Barton's *reliquiae*. Barton may have started for Hamburg, but his increasingly bad health forced him to sail for England earlier than he had intended. In a letter to Dr. Bentley of Salem, Massachusetts, evidently a member of the American Antiquarian Society, to which Christoph Daniel Ebeling had been elected, Ebeling, not having heard of Barton's death wrote 25 March 1816:

> *The misfortune is that I dont know nor can get any notice of what has been published in America. Our litera*[ry news] *papers know nothing of American books, and most of my other correspondents in America are either really dead (as Mr. Muhlenberg Dr.* [Belknap?] *or seem to be so. Dr. Smith Barton I hear has been in Germany, even in Bremen but did*

3328 Theodore H. Savory, *Spiders, Men, and Scorpions, being a Natural History of Arachnology* (London, 1961), 53, and his purchase of Abbot specimens, p. 72.

3329 T. P. Barton collection, BPL.

3330 BPL.

> *not go to Hamburg. In the mean*[time] *I wrote him twice to Philadelphia. I must renew my correspondence with all after a long interruption.*[3331]

In London Mr. Jones of 18 St. Paul suggested in an undated note that Barton might find apartments to suit him at Mrs. Whitfield's in Beaufort Buildings, Strand, "well furnished, airy & I believe quiet."[3332] Barton's paper on "Some account of the Tantalus Ephouskyca," had been read for him before the Linnaean Society 6 June 1815. It had been illustrated with what was alleged to have been William Bartram's drawing. The edited manuscript, mostly in a clerical hand with minor insertions by Barton, is in the Linnaean Society. On 29 July Barton signed his newly acquired copy of William Lambe's reports on a number of diseases.[3333] Had Lambe and Barton met at a meeting of the Linnaean Society?

Great satisfaction to a weary traveler, but one who had surmounted his early poverty, was his friendly meeting again with Dr. Lettsom at Lambrook Court, in Basinghall Street, London—Dr. Lettsom, who had graciously and generously supplied funds to a needy medical pupil far from home and had not expected the enclosed interest when the loan was repaid in 1810. Lettsom arranged for Barton to take back for the Medical School copies of the *Memoirs of the Royal Society of Medicine*, and requested Barton to propose Thomas Joseph Pettigrew (1791–1865) for membership in the American Philosophical Society. The *Memoirs* with a note dated 24 August from Lettsom arrived at No. 8 Cecil street, Stand, to ready for shipment to Philadelphia.[3334] Lettsom was to die in November, just a short month before Barton, and Barton was probably spared the news of his death. Pettigrew's name does not appear among members of the Society. Pettigrew's lasting contribution was to be his *Medical Portrait Gallery. Biographical Memoirs of the most celebrated Physicians, Surgeons, etc. etc.* (London, [1838]–1840, 4 vols.).[3335]

Other medical books were on Barton's search list, one of which was the first classified medical bibliography, the work of Wilhelm Gottfried Ploucquet (1744–1813). It had first appeared in eight volumes (perhaps differently bound) in the copy referred to in the letter below.[3336] A revised edition with a supplement appeared in four volumes. The subject of Ploucquet's work had evidently been discussed with Lettsom and Pettigrew. An answer to Barton's request came from Pettigrew, 3 Bolt Court, London, 11 August 1815:

> *My Dear Sir,*
>
> *I have enquired of Underwood, respecting Ploucquet's Work & find the 4 vol quarto edit to be the latest & to contain more matter than the edition of 10 vols qto. They want Seven guineas & a half for it—I have obtained a Copy for Dr. Lettsom at 7 guineas & have no doubt you may have the other at the same price—*[3337]

Did Barton obtain it for the medical school?

Barton had found kindred broad interests in William Elford Leach (1790–1826), a curator at the British Museum.[3338] After visiting Cuvier in Paris, Leach had introduced "Cuvier

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3331 W. C. Lane, "Letters of...C. D. Ebeling," *Amer. Antiq. Soc.* n.s. 35 (1925): 428; BPL.

3332 Barton papers, APS.

3333 *Additional Reports on the Effects of a peculiar Regimen in Cases of Cancer...* (London, 1815). Ewan, "Barton's Library."

3334 T. P. Barton papers, BPL.

3335 Morton, *Medical Bibliography*, no. 6711.

3336 *Initia Bibliothecae Medico-practicae...* (Tübingen, 1793–1797, 8 vols.); Morton, *Medical bibliography*, no. 6711; *Literatura medica digesta—Continuatio et supplementum I* (Tübingen, 1814, 4 vols.).

3337 Barton papers, APS.

3338 Leach resigned from the British Museum in 1822. Audubon's friend George Children (1777–1851) succeeded him. John Edward Gray had visited the museum when he was sixteen and was stimulated and encouraged by Leach. Gray succeeded Children as Keeper of Zoology. Stearn, *History*, 163–165.

thinking" to methods in the Museum. He was collecting material for his *Zoological Miscellany*, with 149 colored plates (London, 1814-1817, 3 vols.). On Barton's visit books, geology, fishes, and fossils, dominated their conversation. Leach had produced some manuscripts from the archives, and referred to others. Barton desired copies, but without copy machines and typewriters, the time and expenses of copy clerks proved too much, and so there the matter rested. Barton hoped to obtain the 5 volumes, with 120 colored plates, of Edward Donovan (1768-1837), *The Natural History of British Fishes*, (London, 1802-1808), but Leach reported the difficulty of obtaining it in his letter written at the British Museum 1 September 1815:

> *Dear Sir*
>
> *I am sorry to inform you that I could not procure a copy of Donovan's Fishes under nine guineas, the work having been raised in value, owing to its comparative scarcity & the very few copies being in the hands of the publisher. If I meet with a copy on sale in good state, I will purchase it for you & I may be enabled to do this at a lower rate even than seven pounds.*
>
> *I find that the costs in fees &c attending the procuring of the copies of the letter you requested would amont to 5 or 6 £. The fee for ascertaining the existance of the letter would cost 2 guineas, and as you did not authorize me to expend so much I could not take upon myself to do so without further notice from you.*
>
> *I yesterday received three fossil species of ferns for you which within is three chalk fossils I have put into the hands of Mr. McClear with this letter.*
>
> *I was sorry & disappointed at not seeing you at my house. I had the Brickstone, which I likewise gave to Mr. McClear. The leek-green variety, is from a vein traversing Sandstone (of undetermined place) in the Isle of Arran, between Brodich and Lambarth. The black var[iet]y occurs in roled ropes only in the vicinity of the other. The little bit of propyretic* [illegible word] *is from Arran, where it ocurs in the side of a mountain name Goatfel, in rounded ropes.*
>
> *Arran is an island in the Firth of Clyde Scotland. Goatfel is a granite mountain, rugged and barren, but the age of the granite is not known, but is supposed to be in transition.*
>
> *I expect more ferns fossil which will be sent by the earliest opportunity that offers.*
>
> *Pray remember the crabs. Your obt. Svt. Wm. Elford Leach.*[3339]

Nothing is preserved among Barton's papers of a meeting with Sir Joseph Banks, Lambert, Good, or Pursh. Had Pursh presented such a dismal picture of his association with Barton that Barton was given a cool reception by Banks? Banks by this time had tired of Pursh's request for funds, and Lambert knew his weakness for alcohol. Nuttall at a meeting of the Linnaean Society may have explained how Pursh had made free with the use of the specimens Nuttall had collected for Barton and related in particular Pursh's publishing in his *Flora* (page 327) the beautiful *Mentzelia* to which Nuttall in manuscript had given the name "Bartonia."[3340]

Medical treatment for calculus had probably come into the discussion when Barton met Sir Benjamin Collins Brodie, F.R.S.[3341] (1783-1862), vice-president and assistant at St.

3339 Barton papers, APS.

3340 [*Mentzelia decapetala* (Pursh) Urban & Gilg in the Loasaceae. IPNI.]

3341 Morton, *Medical Bibliography*, lists eight papers by Brodie, but see Timothy Holmes, *Sir Benjamin Collins Brodie* (London & New York, 1898), "On the mode of representation afforded by chemical calculus." Brodie appears in the membership list of Medical and Chirugical Society of London, June 1816.

George's Hospital, for Brodie had written on the subject, and Barton had supplied a concretion for the thesis of his pupil W. S. Jacobs, M.D. 1801. Brodie read Barton's paper on the medical properties of *Pyrola umbellata* and *Arbutus uva-ursi* [3342] at a meeting of the Linnaean Society 14 November, after Barton had sailed for home.

Barton and Pennant did not reach Edinburgh. Evidently Barton realized his health was becoming increasingly fragile, and he felt the necessity of getting back to Philadelphia as quickly as possible. It was a great disappointment to him, and probably also to his staunch friends Professors Playfair and James. His debt to the Medical Society's treasury had been repaid, perhaps in 1810 borne by visiting Frederick Hall, and the Harveian Prize had been delivered to Philadelphia.[3343] Barton's election to the Royal Society at Edinburgh may have been in anticipation of his visit, and the receipt of the publications he had forwarded in preparation for his trip. He was now a man of reputation in the field of natural history. Barton's letter from London 20 August 1815 "Sunday" to George Schley in Liverpool records the urgency of his making the sailing of the *Anna Maria*:

> *Dear Sir,*
>
> *I thank you for your very kind letter. I shall leave London, with my son, for Liverpool on Friday, next, and shall make as little delay as possible in the road. I shall, of course, be in Liverpool in time for the vessel you mention. Still I cannot ask you to take passage for me, for fear of some accident: & the more so, as other vessels are to sail. But do say to the Captain, that you fully expect Barton and his son to go with him in his vessel. Nothing will prevent me going in the Anna Maria, if she be at Liverpool, when I arrive, & if she have good places for us. Your friend with great respect.*
>
> *B. S. Barton*
>
> *P.S. Being an invalid, I am very anxious about a good berth in the vessel: and, without absolutely enjoying my passage, if you can say something like it, to the Captain, I will thank you.*[3344]
>
> [Addressed] *To the care of Messrs. Ogden, Rich & Sellers, Liverpool.*[3345]

Then in Liverpool, 6 September 1815:

> *Rec'd from Dr. Barton ninety four pounds 10/ in full for a passage of himself and son on board the ship Anna Maria Capt Waite from his port to New York. John Klack.*[3346]

What plans had Barton made for the shipment of his books and accumulated specimens, some of geologic weight? Was it that William Maclure, Barton's companion on his journey in 1798, saw Barton's condition, and offered, or was asked, his assistance, not realizing the complications and frustrations of the task he had assumed? A somewhat frustrated and put-upon Maclure wrote from London 3 September 1815 to Barton in Philadelphia, the letter to go by the ship *Catherine & Edwards*, Captain Nickery:

3342 [Pipsissewa, *Chimaphila umbellata* (L.) Barton, and Bearberry, *Arctostaphylos uva-ursi* (L.) Spreng., respectively today. IPNI. ITIS.]

3343 Thomas Pennant Barton proudly took possession of William Harvey (1578–1658), *Opera omnia: a Collegio medicorum Londinensi edita* (London, 1766), and it went with his books to the Boston Public Library. "Presented to Benjamin Smith Barton by the Sodalitos Edinensis filiorum Aesculapii, as a prize for a dissertation De Hyosciamo nigro, 1787."

3344 Hunt Institute of Botanical Documentation Archives.

3345 Proprietors of a counting house at 1 Goree Piazzas until 1818 (Liverpool Directory).

3346 Barton, miscellaneous papers, APS.

> *Dear Sir: After much plague and as you will no doubt find by the Enclosed account from Mr. Maclear much expense have at least got your boxes shipt with Catherine & Edwards for Phila.–after you left this I called repeatedly on Mr. Maclear who at last said that all would be settled and your boxes shipped with the first vessel without any expense but the carriage from Dover and the Expence to the ship gave charge of it to a Broker who applyed about 4 days ago to put it on board and was told that there must be an Entering, cocket, Certificate, Bond, Oaths and I know not how many formalities about which I and the Broker were occupied the 3 last days–I write this in the Coffee house and am informed by Mr. Gale that the receipt and acct of the expenses cannot be got before Monday and I must go on Sunday and have this letter open for Mr. Gale to enclose the receipt and acct. nothing new here all equally dark and unsettled on the other side of the channell as when you left this domain with much Esteem yours Sincerely W. Maclure.*[3347]

On the inside flap of the envelope are digits amounting to 34.38 (pounds?).

Back in Philadelphia Corrêa da Serra with his usual good grace had accepted a shipment, the result of Barton's forays with Pennant to bookshops. In an undated note he wrote:

> *I have received your note and the check of four hundred dollars. Tomorrow I will myself accompany the books* [from the wharf?] *and see them safe in your house.*[3348]

While Barton was in Europe, Corrêa da Serra delivered a series of lectures on botany in the summer, meeting at the American Philosophical Society rather than in the University. The lectures began 4 May 1815, and ended 2 July, his having received $1,050 in fees. He published *Reduction*, the 16 pages converting the Linnaean arrangement to the natural families of Jussieu. This was appended to the second edition of Muhlenberg's *Catalogus*, published by S. Conrad. Corrêa may have sent a copy to his correspondent, James Edward Smith. When the New York edition of Smith's *Grammar of Botany* appeared in 1822, it announced on the title-page an "Explanation of Jussieu's System," and "To which is added a *Reduction* by the late Henry Muhlenberg," surely a publisher's error. Corrêa had felt Barton derelict in not advancing the new more logical system, since Barton recognized its merits.

Barton's nephew, William P. C. Barton, published his *Florae Philadelphicae Prodromus exhibiting a list of all the plants to be described in that work which have as yet been collected* (Philadelphia, 1815).[3349] The nephew had often collected with his uncle, and on his own. Had he included specimens from his uncle's herbarium? Stating that his name on the title page should not in any way diminish the reputation of his uncle, but that in publishing the *Prodromus*, which had been stimulated by Clinton's citing a need in his recent *Discourse* for such a work, he had taken advantage of Barton's absence in Europe "since his presence and desire would in all likelihood have caused their suppression."[3350]

Was it merely in honor and deference to a respected professor and physician, dedicated longtime vice president of the American Philosophical Society, one who of late years was dictatorial, crotchety, impatient, and obviously ill, that Corrêa and W. P. C. Barton had acted only after Barton was out of the country, and that Jefferson, knowing that Barton would be

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3347 Barton papers, APS. Mr. Maclear was also referred to as an agent in Leach's letter.

3348 T. P. Barton autograph collection, BPL.

3349 Reviewed by Rafinesque in *Amer. Monthly Mag. & Crit. Rev. 5* (1817) Sept.: 356–359 (Meisel, *Bibliography*, 3: 374), and in *Port Folio* 1 (1816): 74–76.

3350 Preface, vi.

away most of the year and so unable to urge the top honor for himself, had resigned the presidency of the American Philosophical Society in favor of Wistar?

Chapter XXIX

Home

Last Days in His Native Land

Very shortly after the two weary travellers had stepped ashore in New York and were staying "at Mrs. Hesse," David Hosack hospitably wrote:

> *My dear Sir The Ladies of my family desire me to repeat in their name the invitation I gave you yesterday to take a room with us while in New York—adding that it will give them the greatest pleasure to contribute to your comfort during your stay in this city—I shall see you in the course of the morning when I hope you will do me the favour to remove to my house, with sincere wishes for your restoration to health and usefulness, I am Dr Sir truly yours David Hosack*[3351]

Word travelled quickly among New York medical men of the arrival of the distinguished Philadelphia physician. Philip MacNeven wrote to Barton 3 November 1815 "If it be not inconvenient to you to give a place to the annexed packet in one of your trunks, may I request of you to bring it on for Dr. Cox. It contains materials for preparing the Iodine gas accept my best respects & believe me..."[3352] Since mail addressed to Barton from Philadelphia was at first in care of the Post office, and after the fourteenth to the care of Dr. Rodgers, it may be that Barton knew himself too ill to impose on the Hosack household. Pennant had announced their safe arrival in New York, but Barton's letter[3353] had carried the disquieting news of his health, and that his funds were low. He knew he could not meet his university classes on schedule, and submitted a suggestion to which longtime curator of the American Philosophical Society, John R. Smith, replied 3 November 1815:

> *...my dear Friend, I did not meet your first Letter (thro Pennant) in time to avail myself of the mail yesterday to tell you how much we were all gratified to hear of your safe arrival—but your letter of Today has indeed greatly lessened our pleasure—yet I hope the present order back has arisen principally to the nature of your voyage which might well produce such effects. I have seen Mrs. Barton this morning & communicated all to her—she was not wholly without apprehension (as well as myself) from Pennant's Letter—it was however a great reverse* [to her] *as she had habituated her mind to the expectation of seeing you quite recovered—but she bears all <u>like herself</u>.*
>
> *I shall see Dr. Wistar & Dr. White to say & conform to your Suggestions &cc. Your return has been notified in the Papers.*
>
> *I am promised N. York Notes amount for you and if it not in time today will forward them tomorrow. Remembrances affect*[ion]*ately to*

3351 Barton papers, APS.

3352 Barton papers, APS. "Dr. Cox" is John Redman Coxe.

3353 Not among Barton's papers at APS.

Pennant–& write daily–God bless and preserve you. Yours truly Jn. R. Smith.

[addressed:] *To be left at the Post Office till called for. New York.*[3354]

The next day, 4 November, Smith wrote:

My Dear Friend I enclose you $40. being somewhat beyond the Amount you requested. I found it best to send on Pennsla. Notes as the Discount on the other kind would be greater here than in N. York.

Dr. Wistar is very ill with the prevailing Epidemic–too ill to be spoken to–but I have had a conversation with Bishop [Wm.] *White. A meeting of the Medical Students is called for today–the purpose I know not.*

I hope you will not by any means come on at risk–a day or two can make no difference.

Mrs. Barton and Sarah are quite well. I have no Letter from you today. With best wishes yours truly. John R. Smith.

[addressed:] *To be left with the Post office till called for. New York.*[3355]

Mary hastily made plans and left for New York. Sixteen-year-old Sarah was to go with Mr. J. M. White to the care of her Aunt Juliana Susanna White in New Jersey. On 9 November Smith wrote again, this time to Mary in New York:

Dear Madam

We recd. great relief from your Letter yesterday–the Express had strangely misconceived things in relation to the Dr.

Sarah, Mr. White, Sr. went on yesterday & I hope have arrived safely by this time.

I expected Letters to day but have none. Remember me affectionately to the Doctor & communicate anything he may wish to me. Yours truly, Jhn. R. Smith.

[Addressed:] *Care of Dr. Hosack. New York.*[3356]

Sensing that the end was near, Barton made plans for the dispositions of his writings, specimens, and drawings. On 8 and 9 November he dictated to Pennant that Cuvier in Paris was to have his fossil bones as well as the printed sheets in folio of quadrupeds. Also the proof impression of the Argali Bighorn Sheep, [*Ovis canadensis*] done by Alexander Lawson (1773-1846), and the proof impression of Delaware, Chickasaw, and Osage Indian heads done by David Edwin (1776–1841), both Philadelphia artists.[3357] A copy of this memo and the articles were to be shipped to Cuvier under the care of Mr. Morton at Bordeaux.

On the same day Barton continued:

I <u>particularly</u> and <u>urgently</u> request that my two extensive manuscripts on the life and writings of Dr. Priestley and on the Insects of the United States, the last of which obtained the Magellanic premium be <u>not</u> presented to the American Philosophical Society or any account be given to the public. Let these manuscripts be preserved amongst those by my family or

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3354 Barton papers, APS. Neither Pennant's nor Barton's letter referred to by Smith are at APS.

3355 Barton papers, APS.

3356 Barton papers, APS.

3357 HSP. A. Lawson by Mary B. Hart in *DAB*; Groce & Wallace, *Artists*. Lawson was also engraver for Alexander Wilson. David Edwin, stipple engraver, worked in Philadelphia 1798–1831. Joseph Jackson in *DAB*; Groce & Wallace, *Artists*.

friends, and to which something general has been said on the subject of my Manuscripts formerly.

To the Philosophical Society however, I leave copies of all my pub. works. Also a copy of all the sheets which I have already mentioned in my request to the Antiquarian Society of New England of the new edition of my 'New Views'—let it be remembered that they are not to be published, but put among the archives of the Society to be consulted by any future historian on the subject of Indian affairs. I particularly direct this latter memorandum to my friend Mr Peter Stephen Duponceau, he will be enabled to make a selection of the proper sheets by referring to what has been said on the same subject in my memorandum of request to the Antiquarian Society of which Mr. Thomas is president.

To the Philosophical Society I also leave one copy of all the printed sheets of my work on the mammals of the United States, but I wish that this copy not to be given to the Society until the New York Literary and Philosophical Society have received their copy; then if the Society think proper, the Society may publish in their Transactions any or all of the finished articles contained in this work, particularly the articles Bos Americanus, Cervus Virginianus[3358] *&c—provided each publication be made without any the smallest deviation from my own account.*[3359]

Barton stipulated that the Society may wish also to publish his unfinished account on the opossum. The memorandum dated "New York, November 11th 1815" dictated by Barton was written in a hand different from the memoranda of 8 and 9 November:

Should any friend or a book seller be disposed to make a collection of my scattered essays which have been printed or published he will find them principly. in the Philosophic and Medical Journal,[3360] *in the Transactions of the American Philosophical Society in the magazines of Mr. Tilloch's and Nicholson.*[3361] *I think there is a paper of mine, in the sixth volume of the transactions of the Medical Cheml Society of London*[3362]*—to this collection might be added my two memoirs on siren and the large American Salamander. Of the paper on the siren only fifty were ever printed and not many more of the paper on the Salamander. There might also be added to this collection both my letter on Didelphis and my collection of papers on American Archaeology*[3363] *which I dedicated to Mr. Good. The Transactions of the London Linnaean Society also contain I think some papers of mine*[.][3364] *my first publication on American Antiquities London 1787*[3365] *ought not to be reprinted—*

Voight and Albers of Germany have printed some small things of mine so I think has Blumenbach.[3366]

3358 [The American Buffalo, *Bison bison*, described by Linnaeus, 1758, White-tailed Deer, *Odocoileus virginianus* Zimmerman, 1780. MSW.]

3359 Barton correspondence, f. 101, HSP.

3360 Barton's *Philadelphia Medical and Physical Journal.*

3361 *Philosophical Magazine* and *A Journal of Natural Philosophy, Chemistry and the Arts.*

3362 Unknown to us.

3363 *Archaeologiae Americanae* (1814).

3364 *Observations. Tantalus* did not appear until 1818, after Barton's death; see Appendix I, Bibliography of Barton's Writings, no. 171.

3365 *Observations.*

3366 With comments on Barton's paper on the rattlesnake (1796), opossum (1806), etc.

On the twelfth Barton wrote, "It is my request that all the printed sheets and copies of my finished works be offered to some respectable Booksellers or Bookseller for sale, viz.," and here he let Pennant make the list in a column:

> *...my father's works...*
> *1. Elements of Bot. 2. Med. & Phys. Journal. 3. New Views. 4. Collections for a Mat. Med. 5. Fragments of Nat. Hist. 6. Mem on goitre. 7. Discourse on Nat. Hist. 8. Rattlesnake. 9. Opossum. 10. Do—second part. 11. Hell bender. 12. Syren lacertina.*[3367]

Had Barton dictated the works in the order of importance he gave to them?

Meanwhile back at the University professors and trustees were concerned for the health of the occupant of the Chair of Natural History and Botany and the Chair of the Theory and Practice of Medicine, and for the pupils who had assembled expecting classes to begin. Smith wrote again 15 November to Barton:

> *My dear Friend, From the first moment after your arrival in N. York every thing has been done by myself & some other friends here to place & keep things in a proper footing in relation to you*[r] *Chair & the University affairs—but in which there was indeed no difficulty, as I found the Sincerest kindness & sympathy to exist in both boards in relation to your Situation & your Interests. They know your value to the Institution, a conviction of which has increased since your indisposition.*
> *I need say only in a word that a meeting (the second) took place yesterday & at which everything was done that you could wish as the enclosed Letter from Dr. James the Dean will fully show & which I am happy to transmit you.*
> *I hope soon to hear from yourself. In haste Yrs. Sincerely. Jho. R. Smith*
> [Addressed:] *Particular Care of Dr. Rodgers. New York.*[3368]

The letter from Dean Thomas C. James, 14 November 1815 "to Benj. S. Barton M D &c &c" and sent in care of Dr. Rodgers in New York read:

> *Dear Sir I am directed by the Medical Faculty of the University of Pennsylvania, to express the regret they feel at your continued & serious Indisposition, by which, at a period so critical, your professional pursuits have been temporarily suspended, in an Institution in which you have so long borne so conspicuous a part, and which owes to your Exertions a large portion of the present Celebrity—They, nevertheless, flatter themselves with the consolatory hope that you will ere long be restored to your friends & Pupils in this University, and be enabled to resume your useful Labours with the former activity & success.*
> *Your Letter to Dr. Wistar, from N York, was read at a full meeting of the Medical Faculty, and by them was immediately transmitted to the Trustees of the University—who, it is presumed, would have felt no hesitation in complying with the proposition it contained, had the supposed Circumstances, upon which it was predicated, taken place—but the ensuing unfavourable change which occurred in your health, having prevented you from returning to this City at the period proposed; and from carrying into*

3367 Barton correspondence, HSP.
3368 Barton papers, APS.

effect the contemplated plan of having your Lectures read by an Assistant; the Students remain without the Advantage of your Instruction in the Theory & Practice of Medicine.

The Faculty therefore, anxious to be made acquainted with your Intentions on this Interesting Subject, have, in concurrence with the Views of a Committee of the Trustees, directed me to request you, to let them know by as early conveyance as possible, what may be your Wishes on this Occasion and I believe I may venture to express my persuasion of their Dispositions to aid you by every facility in their Power. With sentiments of Respect I remain your frd &c. Tho. C. James Dean of Faculty.[3369]

Again, John R. Smith, Philadelphia 16 November 1815, to Barton in New York:

My Dear Friend

I was most agreeably surprized & gratified by your Letter of yesterday in your own hand writing & which gave great relief to all your friends. But I must employ the short time allowed me before the Mail of the Day to speak of business. You have recd. before this time my Letter of yesterday inclosing the Letter from the Committee of the Boards–they speak for themselves. Your Letter of yesterday came most opportunely & as it contained a reference to the Trustees & Medc. Faculty, who were to have another meeting on the subject that eveng., I communicated it to them through D. White after having seen them personally in relation to its content. Let me say in a word that every thing is going & will go right & in conformity to what you ought to wish. Rest assured the Trustees will do nothing but in accordance with both your wishes & interests, although it must be confessed (& you must & appear to be fully sensible of it) that the embarrassments are great as respects the present state of the class. I will communicate tomorrow the result of the meeting last night & will be able to make an important suggestion to you. In haste Yours truly J. R. Smith.

[Addressed:] *care of Dr. Rodgers, New York.*[3370]

Anxiety on board the sailing ship had doubtless contributed to Barton's ill-health as he worried he would not arrive in time for his classes in the Theory and Practice of Medicine that usually began the first week in February. He was determined to survive as he worried about his position, his income, his family. He knew his days of contributing to the record of natural history were over, and so in his concern for the lectures he wrote:

...let the Trustees, if necessary, appoint one of their present Faculty to read a Course of Lectures on the Theory and Practice for the Season. Perhaps Dr. Chapman might undertake this in which case much of the Materia Medica might fall to Dr. Coxe.[3371]

He had not yet received the reassuring letter from Smith, which had to be forwarded from New York back to Philadelphia. He forsook his bed and with Mary and Pennant set out for the ninety-two miles from New York to Philadelphia. It could be done in a single day, the six horses of the coach changed every eight or ten miles,[3372] but he probably took two or three

3369 Barton papers, APS, in the hand of an amanuensis. We have not seen the letter to Dr. Wistar.

3370 Barton papers, APS.

3371 Richman, *Chapman*, 69.

3372 As reported by Castiglioni; see Pace, Chapter XV.

days, arriving in Princeton 21 November. There he dictated further notes on his publications to Pennant. The letter he had written to Cuvier on the *Siren* while in Paris "will be found among the papers which I brought from Paris, I think, in the little red trunk." His paper on the native country of the potato (1812)[3373] must not be omitted from his titles. Meteoric stones published in Tilloch's *Philosophical Magazine* must not be republished. The "great mistake" in his paper on poisonous honey (1802)[3374] where he misquoted a classical author must be corrected, and perhaps the letter from Sir Joseph Banks should be added.

> *In publishing my paper on the torpidity of animals, inserted in Tilloch's magazine* [1810],[3375] *let it be added, that animal experiments, made under my direction at the Pennsylvania Hospital, have still further established the fact, which I had mentioned in my paper, that the Humming Bird is truly susceptible to the torpid state.* [He added:] *N.B. I hope this collection of my scattered tracts will not be overburdened with notes by any Editor.*[3376]

Smith's last letter dated 19 November 1815, reached Barton after being forwarded from New York:

> *My D Sir*
>
> *The enclosed letter from the Dean of the Faculty & my last letter will completely satisfy you on the subject of the Report to which you allude in your letter to Dr. James. But to business. I calculate on your coming on, but your Lecturing this winter is out of the case. Then first your Chair is safe & will be secured to you absolutely while you live secondly as to the supply of your Lecture this winter—I can now state to you decisively that it can be done. Chapman has authorized me to state to you that he will take up your own Lectures as far as they have been or can be prepared by you & give them as yours. He will then go on himself & complete the course—you to have the whole emolument or such part as yourself may propose—he never to be a candidate for your chair or accept of it if offered during your life—I have but a moment to state this before the mail.*
>
> *God bless you J. R. Smith.*
>
> [Addressed:] *care of Dr. Rodgers. New York* [crossed out and] *Philada.* [indicated].[3377]

A very ill and travel-weary invalid, a patient and worried Mary, and Pennant, relieved to be home after so harrowing a trip, finally reached Philadelphia and Dr. Wistar was called. On 1 December, however, Barton rallied enough to direct a gift to the American Philosophical Society, unspecified in their *Minutes*, but probably the printed copies of his works. A few days before his death he composed a paper on the plant that had been named in his honor.

> *The new genus Bartonia was so named by Mr. Thomas Nuttall. I became acquainted with this young Englishman in Philadelphia several years ago; and observing in him an ardent attachment to, and some knowledge of botany, I omitted no opportunity of fostering his zeal, and of*

3373 See Appendix I, Bibliography of Barton's Writings, no. 161. [*Solanum tuberosum* L., 1753, the Irish or White Potato. ITIS. TROPICOS.]

3374 See Appendix I, Bibliography of Barton's Writings, no. 47.

3375 See Appendix I, Bibliography of Barton's Writings, no. 152.

3376 Barton correspondence, f. 104, HSP.

3377 Barton papers, APS.

endeavouring to extend his knowledge. He had constant access to my house, and the benefit of my botanical books.

...Among a very considerable number of plants which he observed and collected, in the course of his journey, there were two species of a genus...he named this genus Bartonia.[3378] *One of the species he calls Bartonia superba, and the other Bartonia polypetala. The former...a plant about three feet high, whose splendid flower expands only in the evening, suddenly opening after remaining closed during the day, and diffusing a most agreeable odour. It may justly rank, (he adds) with the most splendid plants of either America, and very probably inhabits Mexico, if not South America.*

...In the latter end of the year 1811, Mr. Nuttall returned to England by way of New Orleans. Previously to his departure, he transmitted to me a number of dried specimens and seeds which he had collected. Among these there were specimens of both species of Bartonia, together with a good collection of seeds. At the same time, he sent me a manuscript book, in which he has given pretty full descriptions of the two plants by the names which I have already mentioned: viz Bartonia superba and Bartonia polypetala.[3379]

Barton detailed his dispatching Nuttall to the Northwest in 1810, and Nuttall's "deviating" to his journey up the Missouri River. From Sutton, Lancashire, on 24 February 1813 Nuttall had written to Barton:

I did myself the pleasure of giving your name to a very splendid plant which was figured from a dried specimen; and it afterward flowered with me from seeds. A Mr. Pursh, with whom I became accidently acquainted in London has in my absence, as you will perceive, taken his opportunity of advertising himself at my expense, at the close of my communication.[3380]

Barton continued in his account:

Pursh adopted from Nuttall the generic name Bartonia, and by this name gave an account of one of the species (from dried specimens) in The Botanical Magazine no. 307, pl. 1487. The Bartonia decapetala of this work is the Bartonia superba of Nuttall.

After seeing Lewis's seeds flower in Lambert's garden, Pursh in his *Flora* changed *decapetala* to *ornata*, stating that Lewis had first found the plant in 1804 and in 1807 he had made a drawing and description of it for publication in Lewis's (unpublished) journal. Pursh wrote:

In 1812, Mr. Nuttall on his return from a journey in those parts, brought seeds and specimens of this and another species to London; and having by those means the living plants, I agreed with Mr. Nuttall to dedicate it to the memory of Dr. B. S. Barton, of Philadelphia, our mutual friend; under which name it was published in the Botanical Magazine. Since that publication, Mr. Nuttall, whose name has occurred in several

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3378 [Nuttall's names refer not to *Bartonia* Muhl. ex Willd., in the Gentianaceae, but rather to *Mentzelia* L., in the Loasaceae. IPNI. TROPICOS.]

3379 Barton, *Elements* (1836), fn. 26–27.

3380 Barton papers, APS.

pages of this work, with all the credit due to his valuable discoveries, has found himself rather offended at not having given him all the exclusive credit of discovery, which with justice and propriety to the memory of M. Lewis, Esq. I never could do.[3381]

Barton had concluded his account, then crossed out:

I might say something more in this place, concerning the claims of these two travellers and botanists; but this is rather a matter which respects the individuals concerned than the Public.

He was thinking of agreements. Nuttall had signed with Barton that his:

...journal and all the observations you may make, are to be my exclusive property; and no parts are to be communicated, without my consent, to any person...You will be entitled to a part of all the specimens...but these you are not to dispose of without my consent, as they might otherwise fall into the hands of persons who would use them to my disadvantage.[3382]

"On the genus Bartonia" was read before the American Philosophical Society by William P. C. Barton, and referred on 13 December 1815 for approval to a committee composed of William Barton, Collins, and Corrêa da Serra. There having been no action, on 1 March 1816 the committee was requested to report at the next meting. On 15 March the committee approved publication, but before it could go to the printer the committee learned that Muhlenberg had given the name to an insignificant small-flowered, yellowish gentian, *Bartonia tenella*, the specimen and description of which he had sent to Germany, and which was published by Willdenow in 1801, and which appeared in Muhlenberg's *Catalogus* of 1813. This later *Bartonia* of Pursh and Nuttall [1812] was in fact a member of the earlier genus *Mentzelia* of Linnaeus [1753].[3383] Barton, however, died secure in the pride that his name would be preserved in botanical literature by a strikingly beautiful plant.

Barton, according to his nephew, was visited by his friends and relatives and most of the physicians of the city during his last days. On the evening before his death he had requested that Dr. Wistar not make his customary visit. About three hours before his quiet death on December 19, Mary had seen him tranquilly asleep. Nephew William P. C. Barton read on request a "Biographical Sketch" and description of an ill and struggling physician before the Philadelphia Medical Society 16 February 1816:

His constitution had been worn down by reiterated fits of irregular gout; and a recent as well as severe attack of haemoptisis, had left him even but a remnant of that trembling and precarious health which for years had been his companion. As no sickness could tame the vivid flashes of his mind, ever active, restless, and engaged, his hours of pain were continually aggravated by an attention to his studies and the duties of his chair. Nature was not equal to the task imposed on her. And as she ever returns in sickness and disease the hours which are purloined by active minds, from her customary and necessary rest, Dr. Barton soon perceived the pernicious consequences of his midnight and injudicious toils. That his

3381 Pursh, *Flora*, 327-328.

3382 Barton papers, APS.

3383 [Loasaceae, a different plant family, too.]

efforts to support the reputation of the University curtailed his existence I firmly believe.[3384]

Poulson's American Daily Advertiser for 20 December 1815 carried this notice:

> *Died, in the forty ninth year of his age, Dr. Benjamin Smith Barton, Professor of the Theory and Practice of Medicine, and of Natural History and Botany, in the University of Pennsylvania.*
>
> *His friends and acquaintances are invited to attend the funeral, from his late dwelling, in Chestnut between Eighth and Ninth streets, on Thursday morning next, the 21st instant at Ten oclock.*

Then followed the notice "By order of the President R. M. Patterson, Secy.":

> *The members of the American Philosophical Society are particularly invited to attend the funeral of their late vice president Doctor Benjamin Smith Barton, from his late dwelling in Chestnut Street, tomorrow morning December 21st at ten o'clock.*

The doctor was interred in Christ Church Burial Grounds, Philadelphia. To his tablet was added the memorial of the death of Sarah, aged 17, on 11 January 1817. Mary's gravestone would be placed nearby.[3385]

On page 249 of the Minutes of the Managers of the Pennsylvania Hospital, Meeting of 25 December 1815 appeared the record "Doctor Barton who had for seventeen years been a physician of this House, died in this city on the 19th instant." Dr. Wistar answered W. P. C. Barton's request for information on his uncle's illness on 15 February 1816:

> *Dear Sir: Your uncle was affected with the ordinary symptoms of hydrothorax. I believe the disease commenced before he left this country. From his account it appeared to be mitigated during his voyage to France, and while he resided in that country, but increased a short time before he left England. There was a continued succession of storms during the homeward voyage, and he soon became so ill that he could not bear the recumbent posture, and therefore did not lie down during almost the whole of the time he was on board the ship. His sufferings were such that he wished for death. He used the dried squill as a diuretic, during the voyage, but it did not produce the desired effect. After he landed, a greater diuresis was effected, and he was considerably relieved. His death, although not expected at the time when it occurred, was similar to what I have known in at least a half dozen instances of hydrothorax...Dr. Kuhn, the elder, was found dead in his chair.*[3386]

Much of Barton's manuscript material and the illustrations, especially for his "Elements of Zoology," and his correspondence were packed away in the little red trunk and kept for Thomas Pennant Barton, who eventually sequestered it at "Montgomery Place" on the Hudson River.[3387] Some of the papers seem to have been damaged at some time by flooding and soiled by mud. Crumpled pages may attest to attempts to clean and dry out the sheets.

3384 Barton, "Barton," 22–23.

3385 Edward L. Clark, *A Record of the Inscriptions of the tablets and Grave Stones in the Burial Grounds of Christ Church, Philadelphia* (Philadelphia, 1864), 132.

3386 Barton, "Barton," 24–25.

3387 The contents now at APS.

Teen-aged Pennant had aided in sorting and recording the papers, but was not always successful in reading his father's hand. "Hippocrates observed" became Hippopotamus!

Why had Barton not specified that at least the botany and materia medica notes go to his nephew, W. P. C. Barton? Had he assumed his nephew would have access to them? Perhaps Mary felt she should first sort out the personal and business material, some of which she knew could be sensitive, but she had not the time nor strength left to do so. Did she destroy the eulogy Barton delivered on Priestley, and the paper on American insects he had submitted for the Magellanic prize? The nephew wrote in 1818:

> *It is highly probable that among the manuscripts which were left by the late Professor Barton, much interesting information...might be collected. His well known inquisitiveness, and his constant habit of recording, in however desultory a manner, the facts with which his enquiries made him acquainted, warrant the belief, that the public are deprived of some curious and very interesting knowledge, in consequence of the cloak which has been thrown over his collections. Strange as it may appear, it is not the less true, that not a single one of these manuscripts, not even his lectures on Materia Medica, has ever seen the light. The public is yet to be informed what has become of the industrious collections of that eminent man; and it is sincerely hoped that they have not been recklessly destroyed. Though the author of this work, his own nephew, was engaged in the same pursuits which occupied much of the time and attention of the late Professor, not a single line of his manuscripts has ever been put into his hands, or seen by him; nor was his opinion even asked about the disposition of them. But on the contrary, he was refused a sight of such memorandums and notes as were asked for to enable him to write an authentic account of his life, when called on to do so by the Philadelphia Medical Society, of which the Professor, at the time of his decease, was president. It has been deemed proper to make this public avowal, because it has been mentioned to the author, that some persons supposed him possessed of all the papers and collections of the late Professor Barton, designing by such intimation, to deprive the author of whatever credit his persevering exertions, in despite of discouraging and oppressing obstacles, may have been deserved.*[3358]

His nephew had described him before the Medical Society in 1816:

> *In figure he was tall, and exceedingly well formed; in middle life he might be considered as having been handsome[.] His physiognomy was strongly expressive of intelligence, and his eye was remarkably fine and penetrating.*
>
> *In temperament he was irritable and even choleric. His spirits were irregular, his manner consequently variable, impetuous, vehement. These repeated vacillations between equanimity and depression, were generally owing to the sudden and repeated attacks of his continual earthy companion—irregular gout.*
>
> *In familiar conversation he was often elegant, remarkably facetious, but never witty...*
>
> *As a parent he was kind, tender and indulgent, to a fault. He possessed some high virtues; amongst the most elevated was his unaffected love of country...He always spoke with extreme impatience of the*

[3358] W. P. C. Barton, *Vegetable Materia Medica of the United States; or Medical Botany* (Philadelphia, 1817-1818, 2 vols.), 2: viii, fn.

> *arrogance of pretending foreigners of the literary grade, too many of whom resort to our country, being nothing in their own, and perpetually insult us by their vain and insufferable denunciation of our claims to national genius, talents and learning.*[3389]

The obituary was first published at the request of the Medical Society in *Port Folio* ser. 5, 1 (1816): 273–287, but without some of the details of Barton's early life, or of his publications or honors, since the editor at that time, Charles Caldwell, introduced the sketch by stating that such details would not interest his readers. He wrote:

> *Our estimate, too, of the character of the deceased is somewhat different from that which has been formed by the author of this 'Sketch.' Dr. Barton was a very industrious man in the pursuit of science, and though we do not think he has contributed much to enlarge its bounds, we are willing to believe that his collections will facilitate the labours of the student, to whom he has left a laudable example of active diligence and unwearied perseverance.*

Conversations among folks are sometimes distorted on repetition, and unfavorable comments may increase even among those who have little or no contact with the subject. One would have to read Barton's works to find acknowledgements, and his critics may not have read, may have assumed, may have heard and repeated, until Barton's having taken the work of others without acknowledgement grew into a much greater reputation for omission. Contributors to *Philadelphia Medical and Physical Journal* were always acknowledged, and Barton paid fine tributes to William Bartram in *Fragments* and *Discourse*. A harried man in his later life, Barton gained an unfortunate reputation as stingy from several who would have benefited from greater contact; those who would have consumed valuable time: Muhlenberg, Wilson, and Rafinesque, for examples. His testimonies from his medical pupils prove that, at least until the last years, he was generous in his attentions, and in the use of his books. We do not agree with the editor of *Port Folio* on the insignificance of Barton's contribution, especially to the pupils of that time.

W. P. C. Barton had struggled to be objective and accurate in his obituary oration, knowing full well the antagonisms that had grown around the ill and frustrated man, but as he contemplated his uncle's influence over the span of the five years that had elapsed, his homage to his uncle grew, and he described him in 1821 as a "tall and plain looking man, he had a full, keen and brilliant black eye, which beamed intelligence and intellect in every movement." He had, as recorded by a listener, "a fine impressive forehead,...his nose was, what Lavater[3390] would have pronounced, that of a sage's face...his voice was peculiar, attentuated, delicate yet penetrating; his enunciation clear, distinct, emphatic...an enthusiast in nature's charms...he inspires the enthusiasm so conspicuous in himself. But he is more. He is an acute, penetrating, and reflecting physician...To him our school is indebted for a large share of its high and still increasing reputation." Many of his pupils were "employed in investigating the obscure, and detecting the hidden properties of other plants, as the subjects of their inaugural theses."[3391]

Dr. John Redman Coxe, Rush's staunchest supporter in the medical school, gave his conclusions 29 May 1818 to Dr. J. Norcom, Edenton, North Carolina:

3389 Barton, "Barton," 34.

3390 Johann Gaspar Christian Lavater (1741–1801), Swiss-German theologist and physiognomist.

3391 Pepper, "Barton," 401.

> *That we have met with serious losses in the deaths of Rush, Barton & Wistar, within the period of a few years, must be admitted—and that it requires great talents to fill the chairs they held, with equal celebrity, cannot admit of doubt. The question then arises, how are their places now supplied. That of Rush was first filled after his death, by Dr. Barton—a jealous rival of that great man—what his merits might have been, we had not an opportunity of fully judging, as he died before he had given a complete course—I have reason to think, however, that he would not have added to his celebrity as a professor, by assuming the functions of his predecessor—and that he would have better counselled his own fame, by remaining in the Chair of Materia Medica, in which he certainly was superior...Rush, in my candid opinion dipped as deeply into visionary speculations as any person I have heard lecture.*[3392]

Knowing that the medical faculty was cognizant of the longtime enmity between his uncle and the esteemed Benjamin Rush, W. P. C. Barton thought it appropriate to comment:

> [Barton] *possessed his passion in relation to matters of literary reputation and science, in a most exalted degree. He had long viewed the splendour of professor Rush's deserved elevation in the paths of medical science, with emotions that could not but stimulate him to more vigourous and continued exertions to equal his fame. Let me add, too, whatever may be thought generally to the contrary, he did that great man ample justice in his unreserved conversations respecting his literary and medical career.*[3393]

It was also, undoubtedly, Barton's wish to counteract some of Rush's more extreme views on the treatment of fevers.

Charles Caldwell left the most detailed and striking portrait of "his enemy," the teacher and physician. We give it in detail in our Chapter XXVII, Barton's Favored Pupils. The reader, however, must bear in mind the character and personality of the super critical Caldwell, and remember that his altercations with Barton were recorded with a self-confidence and self-righteousness far above the usual in an author. Barton's "irritability" was most strongly felt when Caldwell, without consulting the Medical Faculty, had begun negotiations for the publishing of a collection of medical theses.

How fortunate for posterity that a faithful nephew had written his first obituary, at once revealing and disguising, since Barton's papers were hurried away into obscurity by his immediate family. Introducing his topic before the Philadelphia Medical Society that 23 February 1816, cognizant of the enmity of some of his audience, W. P. C. Barton prepared them for his tempered estimate of his late uncle:

> *Does it inculcate the moral duty of investing the frail, the spotted portion of a great man's memory, with a shroud of charitable forgiveness; and does it not do all this with the evangelick spirit in which the poet has given us the benevolent caution to 'tred lightly o'er the ashes of the dead.'*
>
> *Genius, gentlemen, is too frequently accompanied by morbid sensibility; and the high wrought power of the human mind, rarely shines with unsullied lustre.*
>
> *During the last ten years it has been my fate to see four or five professors...pay the debt of nature. And though two of these* [Rush and Barton] *were, in the paths whither their peculiar talents directed their*

3392 Carson "Collection," 3: 141.

3393 Barton, "Barton," 21.

> *labours and their zeal, the brightest figures in the history of our country's science—yet I cannot add, that the spirit of the comments I have given on the words of Mark Antony (I have come to bury Caesar, not to praise him), has been either conceived or applied in relation to their memories.*[3394]

As a summary of Barton's life, William P. C. Barton concluded that:

> *Dr. Barton, in the commencement of his career, was not only indigent, but oppressed. He continued his exertions, however, undismayed by poverty, and unintimidated by enemies. And to those who know more intimately than it would be proper to state in their memoir, the struggles he made in early life through the most discouraging, nay appalling influence of want, added to the direful ravages of disease,—his subsequent elevation appears astonishing. His public lectures, and his various works, the rich harvest of his meritorious exertions, soon relieved him from the pressure of indigence, and the mental uneasiness, nay sometimes distraction, that supervenes upon it. He whose mental exertions survive such a fate, and who perseveres through it, is not, believe me, a common man!*[3395]

W. P. C. Barton's obituary of his uncle was published in *Medicinisch-chirurgische Zeitung* 3 Feb. (1816): 145-160, probably that given before the Medical Society.[3396] Dr. Albers through Mertens sent the nephew "the pamphlet containing German extracts &c. of the Biog. Sketch of Professor Barton." Anonymously there was the note: "*Sein Nahme gehort zu denen, die, mit denem Franklin, Rittenhouse, und Rush, du vereinigtan Staaten nur mit Ehrfurcht und Stolz aussprechen,*" linking Barton with men of considered stature in the United States.[3397]

How better to express a summation of Barton than in the words of Francis Pennell:

> *Already the features* [of the young student] *were setting that were to mark Benjamin Smith Barton throughout life. There was an ardent temperament, that was not adequately supported physically, for he never became robust. There was breadth of interest, with strong liking for both history and natural history. There was skill in drawing, which in his mature scientific work was rigorously held in check by his passion for accuracy. In spite of an early ultra-seriousness there must have been a fire about him that led to his becoming a keenly interesting personality.*[3398]

Again Pennell wrote:

> *There was doubtless also something temperamental, that led Barton to see the possibilities of subject after subject, each soon abandoned with the tedium of effort.*[3399]

Pennell at the time of writing this conclusion was unaware of Barton's *Proposals* for publications on Indian language, on zoology, and on his "Flora," and the failure in that early nation to raise sufficient funds for publication. In his later years the increase of Barton's

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3394 W. P. C. Barton before the Philadelphia Medical Society, omitted from *Port Folio* and *Elements* (1836).

3395 Barton, "Barton," 25.

3396 APS Pamphlets, Collective Biography, no. 6, not seen.

3397 W. P. C. Barton from Mertens 9 July 1817. Hunt Institute for Botanical Documentation.

3398 Pennell, "Barton," 109.

3399 Pennell, "Barton," 111.

professional medical activities led also to the curtailment of his natural history activities. The price he paid for his intellectual interests spread among so many fields was, as with Sir John Hill, exorbitant. He was "a Renaissance man *manque*."[3400]

While Barton was in Europe a friendly eight-page letter of 30 July 1815 arrived from Ebeling in Hamburg, telling of experiences during the Napoleonic wars. He gave information on recently published German works on natural history, inquired what had been published in the United States, and about friends. Barton probably did not see the letter, but son Pennant carefully preserved it.[3401]

He could not have seen the friendly letter from Jarvis Roebuck, M.D. 1809, from Santa Cruz in the West Indies, dated 20 December 1815:

> *My dear sir*
> *I have just time to say, that some months ago, I heard of your departure for France, & Mr. Hughes has informed me of your arrival in Philadelphia.—the* [illeg.] *is under siege—& I have myself time, to offer my respects, & the Comp*[liments] *of the approaching season to yourself & family. I shall be happy to hear from you & the circumstances of your Perigrinations & the state of literature in France. You have seen the Celebrated Cuvier!...I hope your health has materially benefitted by the voyage, that Society may continue to receive the advantages of your talents & Application...*[3402]

In a letter of 28 October 1816 from Dunkirk [New York or Ohio?] John Hoskins Jr., M.D. 1804, introduced a Mr. Ruffin (sp.?) who had come for lectures because of "your known affability to students who become acquainted with you,"[3403] a final tribute.

Diplomas and certificates of membership

Accounts of Barton have often credited him with a diploma from Göttingen, in part because he had hoped to attend university there. The confusion may have been initiated by W. P. C. Barton in his account of his uncle because of a folio sized certificate of election to "Societas phytographica Gottingensis...Virum illustrem Benjamin Smith Barton...multis magnisque de universa Hist. nat. meritis clarissimum scriptisque celebratiss..." The year date is given in the old style Roman, and the nephew may not have deciphered it. It is 14t M. Mast., cI⊃ I⊃ cccII [1802]. It was signed by G. F. Hoffman, Med. Doct. Med. & Bot. Prof. P. O. Societ. Dir., and by the secretary.[3404]

On the successful completion of his first series of lectures in the medical school, on 9 April 1790, a certificate, *Collegii Medicorum Philadelphiensis* signed by William Shippen, Thomas Parks, Benjamin Rush, Adam Kuhn, Samuel Powel Griffits, John Redman (president), and John Jones (vice president) was presented to Barton, so that henceforth he could without question sign himself Dr. Benjamin Smith Barton. He still longed for the prestige of the medical degree he had hoped to obtain in Europe, and so he put the problem to C. D. Ebeling, who succeeded in obtaining through Fabricius from the Acad. suae Christianae Albertiae of Denmark in Kiel a diploma dated 31 August 1796:

3400 As George Sebastian Rousseau denominated in *The Letters and Papers of Sir John Hill, 1714-1775* (New York, 1982), xvi.

3401 BPL.

3402 Barton papers, APS.

3403 Barton papers, APS.

3404 HSP.

in virium illustrem Benjamin Smith Barton Profess. Histor. Natur. et botanices in Acad. Pennsylvaniae, membrum Societ. Antiquor. Soctiae, Americ. Soc. Philos., quae Philadelphiae floret, Amerc. Acad. Art ac scient. Bostoniensis et Societ. Histor. Massachuset. ob eximia ingenii Doctrinique publice edita specima et egregia imprimis in rem omnem naturalum et medicam merita Doctoris Medicinae gradum...[3405]

When Barton referred to the institution from which he had won his medical degree in his letter to Ebeling, had he referred to his own American college? Or had he referred to the diploma he told his brother William he had obtained—from Lisbon Academy? Certificates of election to membership in many organizations of the time were labeled diplomas. Barton was elected to the following societies:

1786—Natural History Society of Edinburgh, which became the Royal Society of Edinburgh. He served one year as president.

1786—The Royal Medical Society of Edinburgh of which he was elected one of four presidents in his first year.

1787—Society of Antiquaries of Scotland.

1788—Speculative Society of Edinburgh, which dropped him from membership that same year after he had misused money from the Medical Society.

1789—American Philosophical Society. He was elected in absentia, when it was expected he would receive a degree at Edinburgh that year.

1789—"Diploma" from Lisbon Academy of Science on his homeward voyage.

1793—American Academy of Arts and Sciences, Boston, proposed by Belknap, signed 30 January by John Adams, President, Joseph Willard, vice-president.

1798—Societatis Physicae Jenensis, in a letter from Augustus Johann Georg Carolus Batsch (1701-1802), representing Tübingen professors, and detailing the widespread interest of their institutions in widening their collections.

1800(?)—Linnean Society of London. A foreign member at least from 1800, he contributed ten titles. On 6 June 1815 he read his paper on Tantalus ephouskyca; his paper on Pyrola read for him after his departure from England.[3406]

1802—Societas Phytographica Gottingensis (see above).

1807—Société d'Émulation de l' Île de France. Proposed by Leschenault after his visit to United States and Barton. Signed by M. Foisy, President, and four others. A two-page letter in French from Foisy, Port Napoléon, 18 June (?) 1807, accompanies the certificate, thanking Barton for his contributions and hoping for continued interest and exchanges. Barton noted that it was received in 14 March 1808!

1808—Royal Danish Medical Society, 27 October.

3405 HSP, with seal and signature; Barton papers, APS, unsigned and with no seal or signature.

3406 BPL, proudly kept by Thomas Pennant Barton, as with other papers.

1810—New Hampshire Medical Society, elected an honorary fellow 7 August 1810, the letter accompanying it from Lyman Spalding, Portsmouth.[3407]

1810—Certificate of membership through his correspondence and exchanges with Tilesius, to "virum Illustrissimum" under Alexander I "Totus Russiae autocrataris," in "Imperialis Societas naturae Scrutatorum," signed by "President C Alexius Razumowsky, Imper. Soc. Natur. Scrut Director perpetus, and Professor Gotthelf Fischer. Mosquae Jan. 10." The museum would be most grateful for gifts of specimens and publications. A letter from Levett Harris, St. Petersburg, 13 July, announced the packet containing the diploma and publications of possible interest. Barton marked the letter "Received Nov. 19, 1810."[3408]

1811—The Wernerian Society, Natural History, Edinburgh, elected a Foreign Member 19 April, the Secretary Pat. Neill, who acknowledged the gift of "very interesting little works" sent to Professor Jameson "last winter."

1812—The Berlin Regia Scientiarum Academia Borussica, the certificate signed by Tralles, Stucillou, and Buttman, with no initials, in July.

1812—Swedish Academy of Science, Stockholm, elected 15 January, the certificate signed by Olaf Swartz, secretary. Barton noted that he received this 13 August.

1814—Royal Society of Sweden, Stockholm, the certificate signed 8 October by Anders Sparrman, M. Pontin, Berzelius, and ten others. Barton received it 3 December.[3409]

1814—College of Stockholm, Stockholm, an honorary member, 8 October, the certificate signed by L. M. Philipsonn, Professor and Secretary of Collège Royal de Sanité à Stockholm. Barton received it 3 December.[3410]

1815—Linnaean Society of New England, founded 8 December of the previous year, elected Barton an honorary member 21 January, Hon. John Davis President, Jacob Bigelow Corresponding Secretary, the certificate dated by Bigelow 27 January. Walter Channing, M.D., on the Committee of Inspection, had been a member of Barton's Philadelphia Linnaean Society.[3411]

1815—Danish Royal Society of Sciences, Copenhagen, elected 23 March. It was presented to him after his arrival back in Philadelphia by Mr. Pedersen, minister from the King of Denmark to the United States.[3412]

3407 HSP.

3408 Diploma at BPL; the letter among Barton papers, APS. Levett Harris had been appointed minister to St. Petersburg in 1803 by Jefferson (Dvoichenko-Markov, "Russian-American Relations," 566). Harris sent a number of books to the APS in 1811 and in 1817. He was elected a member in 1821. APS "Minutes," passim.

3409 HSP.

3410 Barton papers, APS.

3411 Barton papers, APS.

3412 BPL.

Chapter XXX

Debts and Due

Barton had considered not returning to the United States, after his unfortunate affair while a student at Edinburgh and his failures in publishing. He had even considered accepting a position in Russia. With the money to pay his homeward ship's fare from his step-grandfather, Dr. John De Normandie, he arrived home penniless and depended upon his brother William, until his medical practice should be established and enough pupils signed up for his new natural history courses at the College. The records are spotty, but a few surviving morsels illuminate his struggles to survive financially and give a glimpse of one man's life in that time.

Bibliophilic pressures induced him at times to purchase books on credit. Soon after the death of Charles Elliott, bookseller, Barton was approached by Adam Bruce, attorney, for settlement of monies due.[3413] Barton had offered a plan to the trustees, yet Bruce evidently suggested that he sell his purchases from Elliott, a solution received with dismay, since Barton did not want to part with his books at any price. However, on 8 August 1793, he seemed to agree, but actually he borrowed funds to repay the debt and keep the books.

Another loan settled is on a scrap of paper, the receipt dated 29 May 1795:

> *Received of Dr. Barton the sum of six pound, on account of the sum of twenty-six dollars which I lent him in 1792, upon the note of which I'll pay to the said Doctor the remedies and advices he gave me.*
> *for the payment of the Sum above I return'd the Bill*
> *Beauvois*[3414]

In a letter of 24 September 1795 Barton wrote John Nicholson, one of the wealthiest men in the country at that time:

> *Dear Sir, you may rest assured that the money shall be repaid to you, this day week, if that will do.—Nothing shall prevent me from calling upon you with it, at that time. I am, with great respect, Dear Sir, Your obliged & Humble Servant, &c.*[3415]

The defeat of the Federalists that year brought hard times to Nicholson and his partner, Robert Morris, who went to debtors' prison in 1798. Nicholson joined him there in 1800. He died in December of that year leaving a wife, eight children and debts amounting to more than four million dollars.[3416] He and Morris had over-speculated in land acquisitions.[3417] We do not have Nicholson's answer to Barton, but he must have sent a threatening letter, since Barton responded, evidently under great emotional stress, judging from his handwriting, in a note that Nicholson recorded as "recd. May 26th 1798":

3413 Barton Manuscripts, HSP.
3414 Barton Manuscripts, HSP.
3415 Charles Roberts Autograph Letters collection, Haverford College Library.
3416 G. Evans in *DAB*.
3417 Copy in unknown hand, John Nicholson Papers, Manuscript group 96, Pennsylvania State Archives.

Dear Sir

It gives me more pain than you may perhaps imagine, to say that I cannot at this time let you have the money so justly due to you.—But I wish to settle it. If you will accept a note for the sum, payable in sixty days, it shall with pleasure and with thanks, be at your service. It may be deposited in any of the Banks.—I do not mean to withhold the interest but do not wish it put on the note. The interest I shall pay with pleasure in a few days.—Yours, &c. with esteem B. S. Barton 18th May[3418]

To whom the following desperate undated letters were written, we have not ascertained:

Tuesday-morning, 12th. Sir, It is not without a great degree of pain, that I write to you on the subject of this letter. You will, however, I hope, pardon the liberty which I take, when I assure you that nothing but a very urgent case would prevent me to do it. I am already indebted to you for your liberal kindness shewn to me, on various occasions. Your attention to me now, or at former times I shall ever remember with a large share of gratitude. The loan of Sixty-Five Dollars will relieve me from much anxiety of mind. This sum as well as that which I formerlly received of you, I shall punctually pay to you, at the time I have mentioned, in the enclosed note. Nothing shall prevent me from doing it. Should you not comply with my request, I still hope, You will pardon me, and put no unfavourable instruction on my conduct.—I am, Sir, with greatest respect, Your humble and much obliged Servant, &c. Benjm. S. Barton, Third Street, between Arch St & Spruce Street.[3419]

And, to George Washington:

Sir, You will place me under a very great obligation by letting me have, by the bearer of this note, the sum of Sixty Dollars, which, I pledge my honour, shall be returned to you punctually on the 5th day of January next. I am sensible, Sir, that I am taking a very great liberty, but a disappointment of a peculiar nature will, I hope, with your goodness, plead an apology.—I am already too sensible of your kindness to me not to feel a great deal in asking this favour. I remain with great esteem & respect, Sir, Your humble & obedient servant, &c, Benjamin Smith Barton, Wednesday morning.[3420]

Barton was still heavily in debt to those professors who had made possible his trip to Edinburgh. Whether he had been able to repay any before the record of 18 May 1797 is not preserved, but at that time he drew on the Farmers and Merchants Bank for $62 each for Rush, Wistar, Shippen, and Physick.[3421] He had now assumed his position as professor of materia medica as well as of natural history and botany at the University and was about to take a trip to the west with William Maclure, and on to Niagara Falls. He was also engaged to, and planned to marry, Mary Penington. It may have been related to his repayment of the professors and his trip and imminent marriage that he approached President Washington for cash. He still harbored the hope that he would find a patron to support his research in the

3418 Gilbert Papers. vol. 1, CPSP.
3419 MHS.
3420 MHS.
3421 Barton, miscellaneous papers, APS.

manner in which European governments financed the Michauxs, Volney, Enslen, etc. to study American resources, and who better than the Father of his Country?

Preserved in Washington's Household Account book is a copy of his letter to Col. Clement Biddle in Philadelphia, 19 January 1798, shortly after he vacated the house at 190 High Street in Philadelphia for President John Adams:

> *Inclosed is a letter, and receipt of Doctr. Barton's for Sixty dollars which I pray you to receive if you can...but I inform you before hand, that you will never get a copper out of it if it depends on him alone...the money borrowed, was punctually, to be returned in a month. After waiting a year, or quite a year, he was applied to, and then, I was, assuredly, to have it in two or three days; after as many months waiting, without hearing a tittle from him applications were again made and the same answers have been received and so it went on until the Scenes of my Public life were closed and he was informed that I was desirous of adjusting all my pecuniary matters in Philadelphia before I left it when the most solemn assurances (without any intention I am persuaded to fulfill it) were given that the money should be instantly paid.*
>
> *It is necessary for me to observe here that Doctr. Barton is an entire stranger to me...*[3422]

Barton had not repaid the loan by 13 August 1798, when Washington wrote again to Biddle:

> *...if I was to bestow the epithet on him which he deserves it would not be a mild one. It is not the value of the money I regard, but to be imposed upon in such a way by a man who was an utter stranger to me is somewhat vexatious.*[3423]

One debt was cleared, when, on 26 August 1800, Lettsom acknowledged payment of interest with the principal of a note he had assumed for five hundred sheets of Part Two of Barton's *Observations*, printed by C. Dilly when Barton was in London in 1788. In 1801, however, Barton's brother William wished payment of the remaining part of his loan of $800 for Barton's journey to the University of Edinburgh, $400 at eight percent.[3424] Barton was later to reciprocate in loans to William and his son, W. P. C. Barton.

On 21 April 1807 Barton asked to resign as one of the commissioners of the Vine Company "as my health is rather delicate, and my professional and other avocations numerous and urgent." An unwelcome note came from James Vaunxine pressing for payment unexpectedly immediate:

> *Phila. Oct. 5, 1807*
>
> *Doctr. Benjn. S. Barton*
>
> *The note of $610 issued by the late General Muhlenberg discounted at the Bank of Pennsylvania becomes due on the 7/10 Instant. By a resolution of the Board of managers of the Vine Company, each individual member made himself responsible for the amount. The death of the President required that a meeting of the Board of Managers Should be called immediately to devise the means of Payment of said note as this*

3422 George Washington Household Account Book, MHS; and Fitzpatrick, *Writings*. On C. Biddle, see R. S. Cotterill in *DAB*; and on Washington, Fitzpatrick in *DAB*.

3423 Fitzpatrick, *Writings*.

3424 Barton papers, APS.

Event will put it out of the Power of General Muhlenberg's[3425] *relatives to attend the*[reun]*to—I remain Sir Your Humble Servt*
James Vaunxine[3426]

Since Barton had not paid his full debt to Shippen by Shippen's death on 11 July 1808, Joseph Reed, Recorder of the City of Philadelphia, and one of Shippen's executors, listed for Barton the amount still owed on the note dated 26 January 1799, which was $313.33. Although Barton had paid $142.99 in several small amounts, the accumulating interest kept the amount due climbing until, on the day of the accounting, it had reached $413.52.[3427] Another promissory note of 22 December 1808 was to pay Robert Evans the sum of $147.42½, which was $144 plus interest.

When only part of a transaction is preserved, as so often is the case with what remains among Barton's papers, there is a quandary. A letter from Isaac Smith was addressed "Dear Cousin," but was it a copy of a letter to Isaac's cousin, probably J. R. Smith, a banker, rather than to Barton himself? The letter from Trenton, New Jersey, 27 June 1806 reads:

Dear Cousin, Inclosed are the half notes of the Bank of the United States for one hundred Dollars each transmitted to me sometime ago as President of the banking company of Trenton by Doctor Benjamin S. Barton of Philada. which his annexed letter will direct how to dispose of. Affectionately yours.[3428]

Something went awry, because Barton, then in Trenton, 30 June, wrote to Mary:

My Dear, Dr. Smith encloses the two half-notes which I had forwarded to him. The remainder have not been found. I beg you to request Mr. Vaughan's attention, in such way as he may deem most proper, to the business. Perhaps, they may be found. No time ought to be lost.[3429]

In his admiration for Joseph Priestley, Barton had been induced to endorse a note for Priestley, probably soon after his arrival in the United States. John Vaughan in Philadelphia wrote him:

Please to endorse Mr. Priestley note for $1200 <u>over</u> my name. It will then take up the former one. It will be called for March 17, 1812.

On 9 February 1815 Vaughan wrote Barton again:

I was unwell when I called & have since been bled & confined to the house. I hope you are better. I informed Mr. Corrêa of your Indisposition & he was to call last evening. Reflecting upon what you said, I have been

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3425 John Peter Gabriel Muhlenberg (1746–1807), brother of the botanist, was, according to Rush, "the most popular and powerful German in Pennsylvania" (Butterfield, *Rush*, 908). He was ordained in London in the Episcopal church in 1772, the same year as Rev. William White. He relinquished the ministry to join the revolutionary forces in 1776 and had a distinguished army career, being brevetted major-general in 1783. He moved to Philadelphia that year, and was elected to the U.S. Senate in 1801, resigning a month later to accept appointment as supervisor for revenue for Philadelphia in 1802. He lived at Gray's Ferry on the Schuylkill not far from the Bartram farm.

3426 Barton papers, APS.

3427 Barton papers, APS. Henry Reed (b. 1808), son of Joseph Reed, became professor of moral philosophy at the University of Pennsylvania.

3428 Barton papers, APS.

3429 Barton papers, APS.

induced to exert myself & have got you relieved from Mr. Priestley's note & requested you will desire Mr. J. R. Smith (upon my showing him the endorsement cancelled on the note) to assign the mortgage in such a way as I shall direct.[3430]

Release from the debt that brought the most satisfaction to Barton must surely have been the payment to the Royal Medical Society at Edinburgh. He had written July 1804 to the Lord Advocate at the University seeking information on preserving fish, and had informed him that, "I shall in all probability take another journey, this summer, as my health, which has been greatly impaired for several years, still continues delicate: and the recovery of my health has been the original object of my former tours." Had that been a current excuse? He had not mentioned the debt. There is no suggestion that the Lord Advocate answered his query. Was Frederick Hall the vehicle for delivery of payment to the Medical Society at Edinburgh in 1809? Hall, writing to Barton from Paris 24 March 1808 told him that he has "not yet visited Scotland, and, of course, not had the pleasure of delivering the letters you sent me to prof. Hope and others...I expect to pass the next winter in Edinburgh, and return to America in the spring."[3431] It was sometime after this that, according to Barton's nephew, the Harveian Prize, which Barton had won for his essay on Black henbane, reached Philadelphia. Did Hall also deliver the note of payment to Lettsom, which Lettsom acknowledged from London in 1810, with the interest he had not expected?

Typical of Barton's persistent attempts in the publishing world was his assuming the costs for a proposal to publish a translation of one of Melchior Adam Weikard's medical works by Dr. Benjamin Shultz, Barton's pupil, a graduate of the Medical School in 1795, and a "respectable physician of Northampton County, Pennsylvania."[3432] The work was not published, but Barton kept the record that Abel Dickenson printed "December 1806, one thousand proposals for Benjamin Shultz including paper &c. $15.00; I sheet 4 to work, $10.00, and in 1807, July 4, for printing 1 half sheet of imperfections, $4.50; June 8, 1811 composing 4 pp. pica octavo not worked off at first cost 28 cents $1.12." His receipt for work from 1806–1811 totaled $46.28. Did Dr. Shultz ever remit these costs to his former mentor? Then there was another project: did Barton attempt a third edition of Patrick Gass's Journal? An undated record for himself records that Barton had "paid to Mr. Gass, for Jos. Cruishank...first 12 doll.; then 10 doll.; next 5 doll.; last 5 doll. at court."[3433] Patrick Gass (1771–1870) had accompanied Lewis and Clark to the Columbia, 1804–1806, and on the return of the expedition was the first to publish an account of the journey. It appeared in 1808 in Pittsburgh, and was reprinted in London in 1810. Was Barton backing the third edition in Philadelphia, N. Carey the publisher, in 1811? Or had he merely come to the rescue of Gass, who still owed the printer? Was it Barton who appeared in court?

A few bills paid are recorded in a preserved bankbook.[3434] On 15 November 1797 E. Cohen signed a receipt for $150 "for one quarter's rent exclusive of taxes due 1st October last in full," but on 15 October 1799 Cohen acknowledged a $100 payment on the Barton home "on north fifth street," the final payment for which Barton expected to make in 1811. On 3 December 1800 Barton paid $3.75 in taxes, $1.50 to the city, $1.25 for the poor, and $1.00 "health." His 1802 taxes were paid 3 February 1803, $3.55. In 1811 his estate was assessed to be $16,080.00 and was taxed at 16 cents per 100, with a personal tax of $2.00.

A few day-to-day living expenses are recorded. On 30 September 1802 William Cooper of Lancaster acknowledged "from Dr. Bardon Seven shillings & six pens it being in full for the making of a Pair of Pantaloons." In October 1810 J. McAlpin gave Barton a receipt for a coat

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3430 Barton papers, APS.

3431 Barton papers, APS.

3432 *Alumni*; cited in Butterfield, *Rush*, 937–938.

3433 Barton papers, APS.

3434 Barton papers, APS.

of the "best superfine drab cloth," $30.00; a pair of breeches extra double milled drab cassimer [a twill-weave worsted suiting fabric], $13.37½; in November a Coat of imperial black cloth, $38.37½; a pair of breeches $16.00, and a vest $10.50, both also in black cloth. On December 22, a Spanish cloak of drab Kersey [a heavy woolen, or woolen and cotton] with mole skin collar lined with silk velvet, bound with galloon [a braid of worsted silk] $27.00, brought the total to $135.25. Mary seems to have kept her bills separately; her purchases may have come from the annuity given her by her father. A receipt from C. Barrington records a few luxuries acquired from 8 December 1809, the day Barton purchased two pounds of almonds, until June 1810. During that time he bought seventy-nine bottles of porter and somewhat less of ale, and there were "4 doz. bottles to be returned."

There were other expenses. Barton paid to Jacob Humm for four new shoes for his sorrel mare $1.25, with .62½ for removing the old, the sum paid in full 18 October 1811. On 7 November 1811 he paid $150.00 toward the erection of a party-wall between his property on the north side of Chestnut street, between Seventh and Eighth Streets, and the New Hall of Freemason's. He had evidently begun payment in April with $50.00. As loan (or barter?) Barton paid $104.29 for the costs of John C. Goodwin, who spent nine weeks with six days board at Pennsylvania Hospital at $5.50 a week, 13 August until 21 October, 1813. On 9 October he spent $49.00 on clothing, and on 21 October $6.00 for a castor [beaver] hat. On 20 May that year he purchased two "Flour" tubs, and "6—[?]" at $12.00, which he paid in full on 20 July. On 3 April 1815, shortly before leaving for Europe he paid Peter Wager for one gallon of Madeira wine at $4.00.[3435]

Barton borrowed from his brother-in-law Edward Penington. Each lent the other money for speculation in sugar on occasion. A receipt for a loan in 1801 is mentioned by Corrêa de Serra in a letter to Jefferson in February 1816, and Barton received a request from Edward 6 February 1812. "If you can lend me 800 or 1000 D[olla]rs on Interest for 2 or 3 months I can use it to advantage." Among Barton's receipts is the note "Recd. Jan. 5, 1801 of Edward Penington twenty five pounds 10 [shillings] in full for half a years Annuity due 1st Inst. 25.0— [signed] Mary Barton." Was this an inheritance from her father? It is not clear what is back of Edward's statement in a letter Monday morning [July 1809], "Mr. Wistar informs me that the person who purchased my brother's Farm [Benjamin's] will pay the money this week." In the same letter he wrote: "As sugar is selling very low at Auction I can dispose of yours to great advantage & will if agreeable to you take it on interest for any time you please to name." Barton replied on July 17, "I have no objection to your having the money on interest; say for six months, from the payment by the person who purchased the estate. At the end of that period, I shall in all probability, want it, as I am extremely desirous to pay off the monies due upon the house. Mrs. Bates [the former owner] is not at home but I have no doubt that my answer will meet her approbation."

There is reference to an unidentified lawsuit pending in court, for or against whom is not stated, but Barton, 18 June 1806, requested the return of "Mr. Ingersoll's[3436] letter" and wrote lawyer Thomas Sergeant, "If I am correct in my suspicion, I will thank you to speak openly and candidly," but there are no other details. There surely had been costs, when in 1812 Barton caused the jailing of Godon, who had attacked him on the street when he learned that Barton had outbid the Academy of Natural Sciences for his mineral collection. The audit made in settling Barton's estate showed only a few minor debts, except for the loan of $900.00 he obtained from the Bank of Pennsylvania for his trip to Europe in 1815. It was due in one year, 1 April 1816, but he had cleared the important debts of his earlier years.

Barton's debts to his Philadelphia professors, the medical school in Edinburgh, or to his London friends had not been repaid in full before he began to lend money to needy pupils, and to grant more time for payment. Remembering his own poverty as a medical pupil Barton

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3435 The foregoing receipts are all in Barton papers, APS.

3436 Was this Jared Ingersoll (1749–1822), attorney general of Philadelphia 1811–1817; or one of his sons, both lawyers, Charles Jared Ingersoll (1782–1862), or Joseph Reed Ingersoll? (Will Bowden in *DAB*).

sympathized with Charles Caldwell in 1792 and granted him extra time for the payment of fees.[3437] Another grateful pupil was Charles Josslyn, who obtained his degree in 1806. He wrote:

> *Oxford, N.Y., Nov. 9, 1807*
>
> *Worthy Sir,*
>
> *It is a long time that I have neglected to write but not without doing violence to my feelings for I have not forgot the promise that I made when I last saw you at Philad. neither have I yet forgot the very generous ever friendly manner in which you treated me when I was under the necessity to ask a particular favour of you—It gives me pain to tell you that it has been out of my power to comply with my promise otherwise, I should have wrote you long ago enclosing the money that I agreed to; but sir I find myself somewhat embarrased and in consequence of my last winter's tour which was a very expensive one to me as I was unfortunate in loosing my money at New York which I believed I mentioned to you. I have removed from my former place of residence and now reside in a very flourshing little village on the Chinango River (called Oxford) I have been in this place about three months. My encouragements are tolerable good so that I live in hopes altho my situation is not so good at present that I shall ere long be able to amply reward you for the valuable instruction I removed from your lectures last winter—Having been much ingaged in business for the summer past I have not paid that attention to the plants...* [but he then sent information on plants and on bears, and requested the doctor check on the fate of his ticket no. 19, 43 in the Fourth Presbyterian lottery[3438]]

Mindful of his own financial difficulties in establishing a practice, Barton lent money to William Thomas Morris, who had not succeeded in earning an M.D., for the purchase of medicines from Dr. Adam Seybert, who operated an apothecary shop and drug laboratory in Philadelphia. On the suggestion of a former pupil, Dr. John Mitchell, Barton had recommended Sunbury, Northumberland County, Pennsylvania, as a place to establish a practice. A tone of reproach and self-righteousness appears in Morris's letter to his "best friend," and the suggestion of self-indulgence in unwise excesses. Mr. Bradford, "Prosecutor of the state" was probably Thomas Bradford, son of Thomas Bradford (1745-1838), the "patriot printer." Morris still sought Barton's advice on setting up a new practice, and asked for letters of recommendation, and patience. He wrote:

> *Sunbury Nov.br 24. 1806*
>
> *You will be somewhat surprised my best friend, at hearing that I have determined to abandon Sunbury, not because I have been idle in it; or had too little to do, but because I find, from the circumstances of the families in which I have practiced, very little probability of being paid for my services; besides, the practice here is too much divided, there are no less than four practioners in this small, very small village, when indeed with all the best practice no gentleman of the profession can be decently supported. Indeed, (my dear friend) Dr. Mitchell must have been more fortunate than I can imagine, to have even supported himself, tho' I am informed he did more business than myself: he certainly could not have pocketed a shilling at the end of the year, when his board &c. were paid off, and indeed I feel*

3437 Caldwell, *Autobiography*, 159.

3438 Barton papers, APS.

somewhat surprised that he should have so earnestly entreated you to recommend the situation to some young gentleman, when he could do little more, with all his exertions, than barely support himself, tho by no way inclined to dissipation. Even admitting I had no Competitor, I could not make a decent living, because the neighbourhood is so very poor that really with all my riding I have not been able to furnish my poor horse with provender. I know you will condemn my rashness in going off; I cannot help it, I have no alternative but starving, or going to gaol. I did intend to return to Frederick Town to gratify the wishes of my parents, but Mr. Biddle of Reading has been so polite as to invite me to his house, in order that I may determine which may suit my purposes best. Several gentlemen from that place have earnestly recommended it to me as the place of my future residence, among which number is Mr. Bradford the prosecutor for the State; he tells me there is an old Physician there, who is the favourite of the rich inhabitants of Reading, that he frequently refuses to attend to the most distressing cases, he never will ride more than a mile or two into the country, that he has no person to contend with but a Dutch Quack—that if Dr. Deemer, had some young person as a partner in the practice, he would see his advantage in it, he has no idea however of encouraging any young gentlemen who does not go there highly recommended & that a letter from you or Doctor Wister would be of infinite advantage to me.

Under the circumstances, would you not advise me, my best friend to go there and fix myself—I thank god I have lost no reputation since I came here, and am well assured there is not a gentleman in Sunbury or Northumberland, who would not do all in their power to promote my interest. I shall take letters to the first families in Reading, and if I determine to reside there I'll do myself the happiness of personally consulting with you in Philad. in the course of three or four weeks.

My bills shall be punctually paid, I have written home for Cost and doubt not I shall receive as much as I may want by the Middle of January next. With the highest sense of Gratitude I am Respectfully Yrs. Wm. Th. Morris.[3439]

It was not only to Barton that Morris owed money, but to his landlord and others in Sunbury. His expectations of pecuniary reward for his services and prescriptions had obviously been unrealistic. Barton had been understanding in discussions of his problems on his recent visit to Philadelphia, and Morris probably carried with him recommendations from Barton and Wistar, who took his youth and sincerity into consideration. But Morris demanded even more patience from Barton, as he detailed his continuing problems and further debts.

Sunbury Feb. 20, 1807

Best of Friends,

That I have not left this place before now, will perhaps be a cause of surprise to you: on my return from Philadelphia, I proceeded to the arrangement of my accounts for settlement, and tho' the prospect of settling them to my full satisfaction was gloomy, what was my surprise to find my bills in many instances complained of as extravagantly high when in reality I made the amount (not equal to the service rendered, or the medicines employed) to suit the circumstances of my poorer patients,

3439 Barton papers, APS.

without laying on additional charge on the bills of the rich, which I am told is the practice of some of my bretheren. I know your goodness of heart will sympathize in my misfortunates—I have not raised money enough to pay for my boarding & lodging, and had it not been for the timely interposition of my home friends, in all probability I should have become the victim of some unfeeling creditor: but thank god my uneasiness is at an end, I have a brother in law, Mr. Dugas [3440] *a merchant in Baltimore, to whom I stated my situation as soon as I perceived it myself, and he has promised to do what you will perceive in the perusal of the enclosed. If you will take his paper (which will be endorsed in lieu of mine, or if you will take mine with his endorsement at a little longer time for payment than the note you gave Dr. Seybert for my medicines, I shall be doubly obliged: your friendship for me I acknowledge has been stretched to its utmost bounds, and I ought to feel ashamed of my self in thus suffering a gentleman, and one who knows so little of my general conduct as you must from the few opportunities you have had, to go my security for the payment of a debt, and still request you to procrastinate the time of payment? My good Sir, nothing but the last extremity could justify or palliate such conduct, and believe when I assure you I feel a deep sense of mortification at being thus obliged, contrary to my own will, to shelter myself under the wing of a man, who has already afforded patronage and protection, and who has even expressed a desire for my prosperity, who had done all that a father could do, I say I feel mortified that I shall never be able to make any other return than the warmest gratitude may dictate, for as to returning the favours already conferred is utterly beyond my scope—*

I leave this on the 2nd day of March and thenceforward fix myself in Reading, where I shall be happy to receive your acknowledgement of this letter, that I may inform Mr. Dugas of your determination—I can scarcely conclude without observing that you must have a very despicable opinion of me for making the above request, but be assured my good Sir, nothing has occurred in my conduct which merits the fate I have met with, and if a promise of always conducting myself agreeably to the very letter of your friendly recommendations, would afford you happiness in the fullilment, depend upon my honour for it—You must know the difficulties young gentlemen of the profession frequently meet with, upon the very threshhold of life; how few have met with dispointment as I have, and would bear with as well, is some consolation, tho' a very poor one: Dr. Deimer will not take a partner and I am therefore obliged to go to Reading upon my own footing; there, if nothing prevents me, I shall endeavour to become every thing, so kind, so good a friend as Dr. Barton could wish. Present my respectful Compliments to yr. good lady, and believe me ever to be your grateful and much obliged Wm. Th. Morris.

P.S. I wish you would send me pr Stage directing to the care of Marks I Biddle Esq. Reading, one Copy of your 'Botany,' handsomely bound & lettered, and consider me a subscriber to your New Work, which you will please to have bound as a companion to the first.

The enclosed you will either return or destroy as you may see proper.

Appropos—I enclosed for Mssrs. J. Conrad & Co. a draft for 47 89/100 $ under Cover to Mssrs. Pottar & Page, do me the favour to enquire if they

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3440 Father of Dr. Louis Alexander Dugas (1806-1884), M.D. University of Maryland, 1827 (Kelly, *Cyclopedia*).

will give me credit for it, as there is no doubt of its being accepted since I have notified Mr. Dugas of my intentions.—[3441]

This letter was addressed to Barton's home, rather than to the University.

Now an even more desperate young man wrote from Reading, saving on postage by having the letter delivered by Dr. Heister.[3442] His plans for his brother-in-law to take care of his note had fallen through. His visit to Sunbury to collect from patients had been a failure, and his supply of medicine was being held there for his debts. He now professed a ray of hope, but there was the suggestion that his behavior had some flaw. Could it have been the same problem that Barton was dealing with in his patronizing Frederick Pursh at about this same time: alcoholism? Yet old Dr. Deemer was becoming friendly and was sending him to patients far out in the country. We hope the doctor was also supplying necessary medicines, since Morris was without his own.

Reading April 19, 1807

My best friend

I wrote you sometime since from Sunbury, enclosing a letter from my brother-in-law, Mr. Dugas of Baltimore; I fear from the silence you have observed, that either that letter miscarried or that you have not been pleased with my conduct as it respects the settlement of my bills in Philadelphia. I am sure you will think not that my remissness has been a voluntary act—I assure I feel too deeply interested in supporting the good opinion you have ever expressed of me, to be the cause of my own disgrace in your Eye, and I hope you will give credit to the detail of my distresses since I have had the pleasure of seeing you—On my return to Sunbury I endeavoured to collect what sums were due me on my books, and notwithstanding all my exertions, I was not able to raise more than $47.37½—my embarrassments were such as to induce me to write home for advice and assistance, my family have not been able to furnish me even with money enough to pay my expenses there. The few notes I received are not yet due and at present, I know of no honest scheme I could adopt in order to pay you; for since I wrote you last Mr. D[ugas]'s situation has been such that he writes me he cannot possibly assist me at this time, and from absolute necessity was obliged to return a draft I drew on him in favour of Mssrs. J. Conrad & Co. protested: I am sure he would not have done so could he have avoided it, for he knew my distresses would increase, for I wrote him I had enclosed his late letter to you, and probably you would expect his interference in my behalf whenever he arrived in Philadelphia—I have to beg you will not think I have acted improperly; the above statement is strictly true—

I am happy to inform you that my prospects here have already begun to open, and so far have exceeded my most sanguine expectations—Mr. Heister informs me has given up the idea of coming her[e] to practice physic. I have made a friend of Dr. Diemer and am firmly persuaded the principal families here will be of service to me in the extent, tho at present I am only on my good behaviour, and hope to establish a reputation in my professional avocations—I have now five patients about six miles from town & have been called to two cases of laborious labour within the last ten days.

3441 Barton papers, APS.

3442 Father of Dr. John P. Heister (1803–1854) of Reading, Pennsylvania, "fond of botany" (Kelly, *Cyclopedia*; Barnhart, *Notes*).

You must say I am going on very much to my satisfaction; considering my medicines have not yet arrived from Sunbury I am doing very well–

I hope you will not be long a Creditor of mine for rest assured, I shall reimburse as soon as in my power–With Sentiments of the purest gratitude I remain Dr Sir Yr Obt. Sert. Wm Th Morris

Compliments to your good lady–Be pleased to let me hear from you very soon.[3443]

By 29 April Morris had not heard from Barton, and feared his displeasure, but wrote him that his business was daily increasing. His main reason for writing was probably to request Barton to send him some "Vaccine matter," surely for smallpox, by the Reading stage: he says nothing about paying the charges. This letter was delivered for him courtesy of a Mr. Moore. Barton had written him on 2 May, but no copies of Barton's letters to Morris are among Barton's papers. Ever attempting to placate his "best friend," Morris wrote again from Reading 6 May 1807, paying the postage:

My best friend

Notwithstanding my present pecuniary embarrassments your favour of the 2nd affords me much pleasure, since I feared from your protracted silence that some parts of my conduct must have met with your disapprobation; I rejoice that you do not think it my fault that your Note given to Dr. S[eybert] *on my account was not taken up by me in due time, as it was entirely out of my power. I have written home for money to reimburse you and have no reason to believe I shall be disappointed, tho' indeed I cannot promise that it can be done before the 12th of this month as it will be impossible for me to hear from my friends by that time. I shall go to Sunbury next Sunday, under the hope of receiving some cash from my former customers, as the next week is that in which the supreme court is held for Northumberland County, I shall expect to see many of those whose notes I now hold and which will be due on the 10th of this Ins.' So that out of these two chances I think I may safely promise to reimburse you before very long: I shall hope you may meet with no increase of difficulties on account of my present inability to discharge the debt; be assured nothing would afford me greater pleasure than to pay the whole of it at this time. Your anxiety on my account, calls forth my warmest acknowledgements, and rest assured my dear friend, that if honest exertions economy & industrious habits can produce any future good to me, the expectations of my friends must ere long be happily realized.–In haste I am my dear Sir Yrs Respectfully Wm. Th Morris.*[3444]

By 8 July 1809 Barton had enough flattery and promise from his delinquent debtor, had contacted Morris's grandmother, and had put the matter into the hands of a Mr. Grant, probably a solicitor. What the grandmother thought of her grandson may only be surmised. She must not have had a very flattering opinion. Morris wrote:

Sunbury July 28, 1809

Dear Sir: Mr. Grant put into my hands your letter to him of the 8th. I am sorry it is not now in my power to discharge the whole amount of your claim, bearing interest from the 7th of May 1807, I hope you will for the

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3443 Barton papers, APS.

3444 Barton papers, APS.

present accept the inclosed bill of fifty dollars; and as I have ever been disappointed myself when I fixed upon any particular time for payment I cannot now possitively promise when to pay the remainder, yet though you have had tolerable grounds to suppose me dishonest and made no hesitation in trying to impress the same opinion upon some of my relatives in Maryland, still I think I have honour and gratitude enough left to pay you your just dues and memory sufficient to retain the obligation—but my dear Sir poverty and disappointments have proved the bane to that good opinion you once possessed of me; for how could I, considering all things, refuse your just demand if it had ever been in my power to pay now—No Dr. Barton I am not dishonest.—I am poor—I have almost been ruined myself by misplaced confidence—you shall be paid every cent I owe you, and altho' I have been made very unhappy by the extract of my grandmother's letter, contained in yours which met the eye of Mr. Grant (and were it not for his goodness, must have injured me very much) yet I know your loss of confidence, and however I may be injured yet I shall still remain your debtor in gratitude, and hope and pray you will not henceforth withhold your contenance from me, your unfortunate & respectful pupil & humble Servt. Wm. Th. Morris.

I hope ere long to remit you the ballance with interest from the 7th May 1807—[3445]

On the envelope sheet Barton wrote "Received this letter and with it a fifty dollar note, August 1, 1809." Whether this covered Morris's debt to Dr. Seybert, and whether Barton received any more on the loan is not recorded among Barton's papers. He had misjudged the young man's abilities and had given his sympathy to one who had not been equipped mentally to earn his medical degree or his place in the practice of medicine.

Another debtor, a favorite pupil who had become a close friend, was Patrick Kerr Rogers, who had arrived from Ireland in 1798 and, already possessing some medical education, within a few months had become a tutor in the University. After taking courses from most of the faculty, he obtained his M.D. under Barton in May 1802. He had married in February of 1801, and in February of 1802 his first child was born. He set up a successful practice in Philadelphia in 1803, but incurred debts in so doing, and later that year returned to Ireland, remaining about a year settling family affairs after his father's death. On his return to Philadelphia, costs of the trip and his debts ate up almost all his inheritance, and he found it difficult to reestablish a practice. After operating a medical library unprofitably for two years, he sold out, finding himself $4,000 in debt. Although he applied for the Chair of Chemistry on Woodhouse's retirement, it went instead to Dr. John Redman Coxe, already on the medical staff. In 1809 Patrick borrowed $100 from Barton, and in 1811 he requested an additional $20. On this second request Barton noted "N.B. I sent no money," an indication, no doubt, that there had not been a repayment of the first sum. Patrick gave public lectures on chemistry and natural history, but in 1812 on the advice of friends he moved to open first an apothecary shop and then a medical practice in Baltimore. In 1819 he became Professor of Natural Philosophy and Chemistry at the College of William and Mary, where he taught until his death of malaria in 1828. He left four sons of achievement, the second having been named in honor of his friend and mentor. William Barton Rogers (1804–1882) became a geologist and succeeded his father as professor of natural philosophy.[3446] Looking back to his years of

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3445 Barton papers, APS.

3446 The four sons were: James Blythe Rogers (1802–1832), chemist and educator (Harris E. Starr in *DAB*); William Barton Rogers, geologist and educator (Geo. P. Merrill in *DAB*, and Michele L. Aldrich and Alan E. Leviton in *The Geological Sciences in the Antebellum South*, James X. Cargan, ed. (University, Ala., 1982), 82–

struggle, Patrick Rogers reminisced in 1817, "A considerable part of my debt was contracted with friends,—real friends who never intended to coerce, much less distress me. Some of them are no more, and their descendents are not at liberty to act as the deceased would have done..."[3447]

On 17 July 1813 to Stebbins Ffitt, who had moved to Charleston to set up practice, went a reminder that he still owed for tickets to Barton's classes. Other pupils needed reminding, and there were patients who were slow in paying their medical bills. One receipt reads "Received of Mr. Thomas Ash 4 dollars, in full £.10.0 B.S. Barton. paid 2 doll. May 5." His account book of bills, 1805–1806 carries the memo, "Mr. John Conrad's medical bill is ninety dollars, and is dated May 17th 1806. Paid in full, by a check, upon the Bank of Pennsylvania, June 16, 1806." Making a copy for himself, Barton wrote to Mr. Samuel Sidman of Eastown: "Sir, I take the liberty of reminding you of the full sum of money due to me, for advice in your illness. You will oblige me by taking steps to have it paid to me. I am, Sir, Yours &c. B. S. Barton. April 25th 1805. Philadelphia." To another patient on 1 February 1815: "Madam," he had no recollection of ever having been paid $50 and he suggested "Pay to Dr. W. Tyler of your place," Frederick, Maryland. Mr. William Renshaw, however, wrote 3 April 1815, "enclosed you will receive $100 bill." He mentions "Mr. Dawes," and that "Mrs. Renshaw, Mrs. Christie, & all the family" are grateful for his "benevolent care & attention." Medical bills at this period were often not settled until after the death of a patient. Barton kept a memo dated 4 February 1805 that he requested from Mr. W. Fraser, a merchant, a sum for medical advice on the settling of the estate of Mr. B. F. West. Mr. Mitchell Tate of Washington City [Rappahanock Co.] Virginia, replied to Barton's request to intercede in the payment of bill owed by a Dr. Johnston, a former pupil (?), reporting that Johnston had settled in Abingdon, and was "doing a very pretty business this season." Custis, 21 May 1807, giving news of his beginning his practice and requesting "some Vaccine Virus by the first mail," wrote that "Burton having lately married a girl with some property, it is probable, I shall be able to collect your money, if you enclose the note,"—and no copy machines in those days!

Still outstanding at the audit of Barton's estate were: "3 March [1816] To note of I Banford at 60 days from 4 Feby. $85.50," and "To Note of Jos. Mouis at 4 Mon. from 5 Feby. $142.12." J. T. Mayweg still owed him the balance of a loan of $90.81, and A[lexander?] Wilson, a balance of $20. There had been loans of "monies" to Pursh sometime before 1801, which Pursh was unable to repay, nor could he, he wrote, complete the drawings he had promised, because he was compelled by his employer, Breck, "to work like the meanest laborer."

Money went back and forth within the family circle. Just as William had loaned Barton money for his studies in Edinburgh, so Barton returned the favor. On 15 February 1807 Barton had to request payment on a loan because by 1 July he needed funds for the purchase of patents in Erie (since 1788 within Pennsylvania). On 11 March 1814 William was disposing of his Erie lots and Patent no. 2614, which Barton had failed to include when he sent documents in 1811. Evidently both had invested in this growing community. Barton also helped finance the publication of William's *Rittenhouse*, receiving as collateral one hundred copies. William on 11 March 1814 sent a draft for $150 in care of W. P. C. Barton with "thanks for the use of it." W. P. C. Barton had been financed through medical school by his uncle Benjamin, as had Robert Rittenhouse Barton, at least in part. Uncle Benjamin had seen Henry David Zantzinger through his training as a printer under William Hamilton in Lancaster. Thomas Barton Zantzinger had also borrowed on occasion, and Barton endorsed notes for him. Then in 1811 Barton approached his nephew, now well established as a lawyer, for funds. In a promissory note of 13 July, Barton promised to pay "six hundred dollars

104, portrait, p. 86); Henry Darwin Rogers (1808–1866), geologist (G. P. Merrill in *DAB*); and Robert Empie Rogers (1813–1884), chemist (Lyman C. Newell in *DAB*). All, Elliott, *Dictionary*.

3447 His wife, Emma Savage Rogers, wrote and edited *Life and Letters of William Barton Rogers* (Boston & New York, 1896, 2 vols.), 10, in Chap. I "Ancestry."

without defalcation for value received," and on 7 November he paid $150. On 14 February 1812 Zantzinger requested that Barton re-endorse a note on Pennsylvania Bank for $800.[3448]

"Jamie" Bartram, favorite nephew of William Bartram, benefited from the close friendship of the two naturalists, although money is not mentioned in correspondence. Though he did not earn a medical degree he sailed successfully as ship's surgeon. There were references to the possession of lottery tickets, a mode of financing bridges and other public works. Brickell, 25 November 1807, inquired of Barton the result of the Bustleton-Smithfield turnpike: Mary Barton held some tickets, about which she wrote David Rittenhouse Barton after Barton's death. Barton's records, scribbled usually on mere scraps of paper, for paper was more precious then, testify to the time stolen from the pursuit of his beloved natural history by the hard-pressed physician and professor.[3449]

Shortly before sailing for Europe Barton was canvassed by patentee Horatio Gates Spafford and purchased on 18 February 1815 share number four at $10 for the right to use an "Improved Wheel-Carriage" on any four-wheel vehicle, but on one only, though the article might be transferred.[3450]

3448 Barton papers, APS.
3449 Barton papers, APS.
3450 Barton papers, APS.

Chapter XXXI

Conclusions

Settlement of Barton's Estate

Barton had carefully specified the disposition of his writings, but for other possessions he died intestate. On 28 December 1815 "Letters of Administration" was granted "unto Mary P. Barton, widow, to the Estate of Doctor Benjamin Smith Barton, deceased,—Edward Penington of City of Philada. Sugar Refiner[,] Elihu S. Sergeant of said City[,] Attorney at law [signed] Sam Bryan, Regt."[3451] The city declared Mary liable for $18,000 minus orphans allowance, and Mary stated she believed, to the best of her knowledge, that "goods, chattels, and credits" would not exceed $9,000. On 18 January the contents of the house were audited: front and back parlours on first floor with two kitchens; front and backrooms and small room on second floor; back and front rooms and servant room on the third floor, stairs with carpet and rods, and a settee in the entry. To choose some items, the clock made by Rittenhouse and purchased by Barton was the most valuable possession; it was valued at $300. It was followed by his carriage and harness, and two "chairs" and harness at $250 and $180. The piano and stool purchased for Susan's lessons were valued at $170, and so was the silver, most of which had been inherited by Mary on her mother's death in 1797. There were three battle pictures at $50. "The Last Supper" at $2, the picture of Franklin at $3, and other pictures not further identified, totaling $28. There were three "family pictures," $3; six small portraits, $6; and there was a thermometer, $2.

Barton's study is not identified. Perhaps the auditors turned away from a littered room in the cellar with its stacks of plant specimens and jars of fish and other animals in spirits. There is no mention of a cellar, but most three-story houses had one. He may have had a study on the second floor front, the only room with a bookcase and a "bureau," the only upper room without a bed. Had some library or laboratory furniture been removed before the audit? The front room on the third floor possessed, besides a bed, a chest of drawers, a cabinet, and a table. Barton usually saw patients in their own homes or the hospital. The total audit of household effects came to $2133.50, and was signed by John R. Helmuth, and sworn to by nephew, Thomas Barton Zantzinger, 26 June 1816, before Samuel Bryan.

In January 1816 began the detailed audit of the estate. In the Bank of Pennsylvania was $900.84, but Barton had withdrawn $900, the note due 1 April 1816. It had probably been for expenses of the trip to Europe. He had stock in the "N. L." Bank worth $580, and the sale of a U.S. loan brought in $807.49. Among those to whom he had loaned money were J. T. Mayweg, balance of loan $90.81, and the balance of interest from A [Alexander?] Wilson, $20. The house was sold for $35,300 to Mr. G. Pepper, successful brewer in town. He also purchased the plants "with expenses," (the greenhouse and contents?) for $152.90, plus the insurance on the house, $290. The carriage sold for $200, one gig for $130; Mary had presumably reserved the second "chair" for her own use. Mr. Savage purchased claret for $292. Furniture and Barton's collection of minerals were auctioned on 9 May, the furniture for $821.90, the minerals for $582, with $44.77 as commission for the auctioneer. The hospital purchased "phials."

[3451] Records, Philadelphia City Hall.

Of most interest to us must be the sale of Barton's books.[3452] On 8 April 1816 the Philadelphia Library (now the Library Company) paid $72.05 for its purchase; on 15 April the American Philosophical Society, $151.60; 9 May 1816 the Pennsylvania Hospital, $2,763;[3453] 9 May, Dr. Gallagher $21; and by auction 1 December 1816, $1177. On 3 March 1817 books still unsold were appraised at $600. Matthew Carey on 5 December 1817 purchased "botany books" for $237.

On the other hand, there had been loans still outstanding: from Lydia Biddle, $197.39; Mr. Pedersen, $5; G. Edwards, $125.88. Other amounts were owed, for example to Alexander Lawson, his engraver, $66, and unspecified to Hannah West, $42.50. There were Orphan's Court small amounts due; a furniture tax for $50.13. Funeral expenses for the hearse, etc. had been $5; to F. Dress, probably the undertaker, $30; and cost of power of Attorney to Mary $1.50. E. S. Sergeant charged $150 for his legal services, and a search of the register's office was $0.20 plus a fee to the Register "for examining passing this account and for copies, seal and certificate and for issuing notices of intended confirmation of this account by Orphans Court, $7.78," and further fees to Clerk of Orphans Court, $1.50. As Administratrix, Mary was allowed a fee of 3% of the assets, which amounted to $47,495.42. Since the debts came to $9,392.75, she was allocated $38,102.67 "to be distributed as the Law allows." This she "affirmed and subscribed" on 12 April 1817.

Mary made a donation, the content unspecified, to the American Philosophical Society 19 April 1816,[3454] and on 20 February 1818 "allowed the Society to take specific items from her late husband's cabinet." Left among Barton's papers was Pursh's "Journal of a Botanical excursion in the North Eastern parts of Pennsylvania and in the State of New York."[3455]

James Geddes, "civil engineer," reported in 1820 that "a copy of one [geological profile] sent to the late Professor Barton in 1813 [was] since returned to me by his executor, the late Dr. Adam Seybert."[3456] Perhaps Mary Barton, on finding the profile among her husband's papers, had requested Seybert to return it to its owner. He was not one of the executors to Barton's estate.

Just where Mary, Sarah, born in 1799, and Thomas Pennant Barton lived the next few years is not recorded, probably either with Edward Penington, or the brother back in the family home on the city's outskirts. Within two years Mary was to suffer another loss in the death of Sarah. William P. C. Barton considered his uncle a kind and even too indulgent a father. Barton could well have tried to compensate for times when his gout may have affected his patience. On 25 September 1809 he had hired a piano, had it tuned, and paid for forty-one lessons for Sarah.[3457] He later purchased that or another piano, the one appearing in the audit of household furnishings. Sarah Esther Barton, sometimes referred to as "Hetty," sometimes as "Sally," was affectionately referred to by her cousins, uncles, and aunts. She visited on occasion the Richard Peters Bartons on the Virginia farm, her Aunt Juliana Susanna White in Woodbury, New Jersey, and Uncle David and Kitty in Lancaster.

David Rittenhouse Barton invited his grieving sister-in-law and Pennant to come to Lancaster for a visit, this in answer to the announcement of Sarah's death and Mary's request for information on the transfer of the value of lottery tickets issued after the dissolution of the oversubscribed Columbia Bridge Company,[3458] in which both David and B. S. Barton had purchased shares:

3452 See Ewan, "Barton's library" for its content.

3453 Pennsylvania Hospital Board of Managers, Minutes, 12 May 1817, gives the sum as $2,770, so perhaps more books were added.

3454 APS, "Minutes," 463.

3455 Published Philadelphia, 1866; reprinted in 1923 by the Onandago Historical Associaation with corrections of spelling and grammar.

3456 *Albany Inst. Trans.* 1 (1830): 59.

3457 Barton, miscellaneous papers, Box H, APS.

3458 A fine bridge was erected over the Susquehanna in 1814 by an incorporated joint stock company, in which the state took stock to the amount of $90,000. It was about 11 miles southwest of Lancaster, 75 miles west from

Lancaster, Aug. 19 1817

Dear Sister,

I have received your favour of the 15, requesting me to advise you how to remit the amount of lottery tickets. In answer thereto permit me to suggest, that the most safe and eligable mode (provided not attended with too much trouble) will be an order from the Bank of Pennsylvania on the Branch Bank in Lancaster, and which can be obtained at any time by the payment of the money in the Bank of Pennsy and for which the order will be given. I herewith inclose brother's acknowledgement of the receipt of the ticket, which I deem it proper you should have. Should no good private opportunity offer, the tickets with the order, may be forwarded by mail. They can be so enclosed as to comprize a double letter, which however you will please leave unpaid, as the postage whatever the same may be, I will pay, and charge the amount to lottery. With respect to numbers 2712, 2733, 2724, I will manage as well as I can, as they are not to be obtained, requesting at the same time, that should they at any time be found you will please rescue them for me as vouchers in my settlement.[3459]

The letter was addressed to "Mrs. Mary Barton, Relict of the late Doct. Benj. S. Barton, care"; and here there is a tear, but enough remains to know it was to the care of Thomas Barton Zantzinger, lawyer in Philadelphia. He had once been favored by a loan from his uncle Benjamin. Barton had misplaced the lottery tickets, and some had surfaced, when Mary was sorting his papers.

David thanked her for her invitation to his wife "Kitty" to stay with her on her next visit to Philadelphia. David died the following year, and Mary willed to Catherine Barton, widow of David Barton, during widowhood, and after marriage or death, to her children, or should they die then to her own son Thomas [Pennant Barton], "One thousand to be invested in stock or other approved security, the interest thereof half yearly." It was only after the suggestion of her friend and councilor, Esther Waters, daughter of David Rittenhouse, who had written the will and signed the explanation for Mary, dating it 10 January 1820, that Mary added for Pennant the same sum, "One Thousand to be invested." Was it an unconscious financial insecurity during her own married life to an ailing, struggling physician and bibliophile, that she thought first of widows? She also left the sum of Five hundred dollars to Sarah Dickinson, widow, her sister (?).[3460] Mary had acquired a share in the Library Company of Philadelphia in 1803; this was registered to Pennant in 1820. The portrait of a modest Quaker Mary,[3461] painted by Rembrandt Peale (Figure 7), was treasured by Pennant, who took it to "Montgomery Place" when he returned from Europe; and down through the years it has graced the wall of the drawing room.

Pennant Barton remained in Philadelphia in school and until at least 1825, for in that year he was appointed to a committee of history for the American Philosophical Society, that committee the forerunner of the Pennsylvania Historical Society.[3462] He gave a paper "On the

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Philadelphia. It was 5690 ft. long, 30 ft. wide, and consisted of 53 arches elevated 23 ft. above the water, and cost $231,771. The whole capital of the company was $419,400, the balance employed in banking, the company having banking privilages by their charter. The structure was greatly injured by the freshet of February 1832. Our thanks to Alan Armstrong, letter 23 July, 1984; Thomas F. Gordon, *A Gazetteer of the State of Pennsylvania* (Philadelphia, 1832).

3459 Barton papers, APS.

3460 Gardner collection, Edward Penington papers, Box 25, HSP.

3461 *Antiques* 91 (1967): 234–239, the portrait p. 237.

3462 "The Committee of History, the Moral Science and General Literature," formed of "Official and private letters, Indian treaties, ancient records," maps, etc., which throw light on the history of the United States, particularly of Pennsylvania, was approved 15 Dec. 1815, the birth of the Pennsylvania Historical Society; APS "Minutes," 453, 456. This explains the presence of Barton manuscripts at the Historical Society. Duponceau published Barton's

Aborigines of Pennsylvania, their numbers, names,..." probably encouraged by Duponceau, who headed the committee and to whose care B. S. Barton had willed his manuscripts on American Indians. Shortly thereafter Pennant left for Paris. In 1833 he married Cora Livingston (1806-1873)[3463] the only surviving daughter of Edward Livingston (1764-1836), who had been an early member of Congress from New York, then a representative senator for Louisiana, and Secretary of State under Andrew Jackson. Livingston resigned from the position to become minister to France to negotiate Napoleonic spoliation claims of Americans. Pennant became his secretary. When Livingston became frustrated and resigned to return to the United States in 1835, Thomas Pennant Barton (Figure 8) was made *chargé d'affaires*. His agreeable personality, his skill with the French language, and Cora's charm made them socially popular in France. Conditions of the French settlement proving unsatisfactory to the Americans, they returned, landing in New York in January 1836, going on to the Livingston home, "Montgomery Place" on the Hudson near Barrytown and "Clermont." Edward Livingston had recently inherited the estate from his sister, Janet Livingston Montgomery, widow of Irish-born Revolutionary general, Richard Montgomery, along with a considerable fortune.[3464]

From his father and his grandfathers came Pennant's love of books. However much he had been disappointed in the restriction of activities on his trip with his ailing father to Europe in 1815, he had enjoyed browsing the book stalls and shops. Records of his book buying, however, date only from 1834 and continued until 1866, three years before his death, showing his discrimination and knowledge of value. Becoming a gentleman farmer after reaching "Montgomery Place" (Figure 12), he now devoted the rest of his life with Cora to developing the three [or four?] hundred acre estate into a fine garden, and to his library, kept in New York, where he spent the winters with occasional visits to Philadelphia. He became a leading Elizabethan and Shakespeare collector and bibliographer, pursuing meticulous research, a connoisseur of fine books and bindings, of which he came to possess about 2,000. There had already been about 10,000 miscellaneous titles in the Montgomery-Livingston Library, mostly devoted to law.[3465]

Pennant published twenty copies of *Description of a Copy of the First Folio Edition of Shakespeare, now in the collection of T. P. Barton* (n.p., 1860), 22 pages. The copy "No. 7 Mr. John Russell Smith with the best regards of Thomas P. Barton" is now in the Folger Library, Washington, D.C. Pennant possessed a copy of Darlington, *Memorials*, and of Bartram's *Travels*. Pennant also possessed two books of his great-grandfather, Richard Barton, ten of his father's titles, his Uncle William Barton's *Rittenhouse*, the memoir of his grand-uncle, David Rittenhouse, and works of his cousin W. P. C. Barton. The copy of Pennant's autobiographical *Literary Life* had been presented to B. S. Barton by the author, a cherished correspondent, and by him to his son named for the British zoologist. There was also a copy of the anonymous paper by Benjamin Rush on criminal punishment. Laid in Barton's paper

correspondence with Heckewelder on American Indian languages, *APS Trans. Hist. Lit. Comm.* 1 (1819): 351-448.

3463 Cora was born on Chartres Street, New Orleans, but moved to 56 Royal Street, on which site was built the Orleans Parish Civil Courthouse, now a museum. Hatcher, *Livingston*, 123; and for Livingston, W. S. Carpenter in *DAB*.

3464 Alden, "Shakespeare Collection," 169-173. "The Manor of Livingston" is illustrated in Andrew Jackson Downing, *A Treatise on...Landscape Gardening* (New York & London, 1844), opp. p. 34, a description on p. 35; and in A. J. Downing, *Rural Essays* (New York, 1853), 192-202, with no mention of T. P. Barton and Cora except in the "greatest pleasure" the family had in adding "admirable improvement" to the *400 acre* estate, and the "arboretum" just commenced with a scientific "arrangement." A recent book describes the development of "Montgomery Place" and the part played by Coralie Livingston Barton and T. P. Barton with the enthusiastic advice of A. J. Downing. He described the home "second as it is to no seat in America." Jacquetta M. Haley, editor, *Pleasure Grounds, Andrew Jackson Downing and Montgomery Place* (Tarrytown, N.Y., 1988), with illustrations by Alexander Jackson David, portrait of Coralie L. Barton, p. 54.

3465 Frank H. Chase in *DAB*; Boston Public Library, *Catalogue of the Barton Collection* (Boston, 1888, 2 vols.), iii.

on *Facts relative to the Opossum* there were manuscript letters and a master of arts diploma granted to Pennant's grandfather, Rev. Thomas Barton, by King's College, New York.

Like his father Pennant suffered from gout, though only in his later years. He died 5 April 1869 leaving his library to Cora—they had no children. Cora eventually sold it to the Boston Public Library for $42,000, stipulating that it be kept intact. With it she presented his papers.[3466] Pennant was "a man of great refinement, high character and fastidious taste." A miniature of him painted in Paris in 1835 by Etienne Bouchardy shows a "young man of marked elegance, mild in expression, with a face framed in handsome brown hair and beard" (Figure 8). Cora lived but two days after the delivery of the books had been completed in 1873.

Aftermath: His Successors

Early in 1816 the Trustees of the University resolved to organize a "Faculty of Physical Science and Rural Economy" outside but parallel to the Faculties of Arts, Medicine, and Law. Corrêa da Serra having declined to take the professorship of botany and natural history, Rafinesque grasped the opportunity to apply for both or either of the fields, and he so wrote from the home of Edward Livingston in Clermont, New York, emphasizing his peculiar qualifications, and stating that he would teach the new Natural Method of plant classification of Jussieu, and become "The American Linnaeus." Rafinesque had, however, impressed Philadelphians as vain and boastful. It seemed fitting that W. P. C. Barton, who had been his uncle's pupil, had assisted him with drawings and had accompanied him on local forays, and whom Zaccheus Collins described as a "patient and successful cultivator of botany," should succeed to the position for which he had long aspired, Professor of Botany. When in November of 1815 it had become apparent that Barton would not be back in time to meet his classes, W. P. C. Barton had initiated a course of lectures on "Elementary Philosophical and Medical Botany," which was given first in the University Chapel, then in Anatomical Hall on Fifth Street. Caldwell was appointed Professor of Natural History, which included zoology and geology; Dr. Thomas Cooper became Professor of Mineralogy and Chemistry; Thomas C.

3466 George Ticknor (1791-1871), Harvard professor of literature, student at Göttingen, one of the founders of the BPL in 1852, wrote to Joseph Green Gogswell (1786-1871), student at Göttingen with Ticknor, Harvard librarian and professor until 1823, who helped organize the Astor library in New York, the letter dated Brookline, 7 Sept. 1869:

"...We had a most agreeable visit from Mrs. Barton and you, and would gladly have had more of it. Indeed we had more from her, for she came again yesterday, and spent an hour or two talking about 'the books.' She is a charming woman, as she always was, and does not look nearly so old as I am obliged to remember that she must be.

"She read me a paper which she had, I think, shown you, drawn up as skillfully as her father would have done it, and told me that you were to have, for a fortnight, the two catalogues she brought here when she came with you on Saturday. I wish the books in both were well settled on the shelves of the Boston Library. But I had no opinions to give her different from those I gave her when you were present, to wit, that she should make up her opinion from the best information she can get...

"As property the collection is, no doubt, valuable, and she does not purpose to part with it without a proper compensation. But she can easily find out its value. You are to help her, and I am very glad of it, for I cannot...

"The principal matter of course, is the Shakespeare collection. She says that Rodd told her husband fifteen years ago that it was the fifth most important Shakespeare Library in the world. It must, I suppose, be higher on the list now. At any rate, there will be nothing like it in this country for many a year, if there ever is: and whoever on this side of the Atlantic wants to write carefully and well about Shakespeare or the old English drama, must sit down by the Barton books and study his subject there, or go to England.

"But I think Mrs. Barton is not only a very winning and attractive person, but that she has in her character a great deal of her mother, who was one of the most intelligent and acute women I ever knew, and of her father, who made the Code for Louisiana, and who, as General Jackson's Secretary of State, wrote the famous proclamation. I think, therefore, that she needs little help in such a matter as that of the books, which she knew all about in her husband's lifetime, and all whose opinions about them are familiar to her. She will not make mistakes, nor do I mean to make that of thinking that I know more than she and you do." (*Life, Letters, and Journals of George Ticknor*, George S. Hilliard & Anna Ticknor, eds. (Boston, 1876), 2: 488-489. Both Ticknor and Cogswell are in the *DAB*.)

Hewson, professor of Comparative Anatomy; and R. M. Patterson, now Vice-Provost, Professor of Natural Philosophy and Mathematics.[3467] In the Medical School anatomy was still taught by Wistar, surgery by Physick, Midwifery by James, Chemistry by Coxe, Theory and Practice of Medicine by Chapman, Materia Medica by Dorsey.[3468] Barton's positions had multiplied.

Now that teaching material was no longer easily accessible with the decline of "Woodlands," the sale of Barton's home, garden, and greenhouse, "At a meeting held this week [19 March 1816] the Cabinet of Sciences appointed a committee to confer with the Trustees of the University of Penn. upon the subject of an Union of effort for the purpose of establishing a Botanic Garden in the vicinity of Philadelphia. Their letter they wish should be presented by you."[3469] On 17 May a committee consisting of William Rawle, James Gibson, and Duponceau was appointed by the American Philosophical Society to petition the Corporation of the City to appropriate Potter's Field, the burial place of soldiers of the Revolution, present Washington Square, for a botanic garden under the direction of the University, but nothing came of this suggestion.[3470] Instead, as W. P. C. Barton wrote to Carl Heinrich Mertens 9 July 1817, "The trustees of our University have lately purchased forty-two acres of fine land two miles from the city, for the purpose of establishing a botanic garden, and I have just been appointed Director of the Garden" and he would gladly exchange "seeds and roots."[3471] It appears that a subscription fund was inadequate for supporting plantings and care, and so in the spring of 1818 W. P. C. Barton was permitted to cultivate the yard next to the University building, which he did until he resigned from the University about 1838, and the idea of a botanic garden withered.

"Amiable Wistar" was soon to leave the scene. On 22 January 1818, ten days after he had invited John Vaughan and Captain James Riley (1775–1840) to sup with him, Wistar died and was laid away in Friends' Burial Place at Fourth and Arch. William Tilghman, speaking before the Medical Society, lamented that "A few years have robbed us of Shippen, and Woodhouse, and Barton and Kuhn,"[3472] and now a physician more beloved than any of the others, Caspar Wistar. Dr. Gross declared Wistar to be the "idol of his classes, and probably the most popular teacher of his day in this country."[3473] "Of time, and nothing else, he was avaricious...He often read in his carriage" but he believed "to read or listen to works of mere fiction was little better than loss of time." Pope and Milton were his favorite poets, also Cowper and Burns.[3474]

With the death of Wistar, there came an end to the colorful founding era of the medical school in Philadelphia.

Docent José Françisco Corrêa da Serra

There was another problem to be dealt with after Barton's death: the retrieval of Lewis's journals, which were to have aided Barton in the publication of the natural history, and which now were buried in the mass of papers left for Mary and her brother Edward to sort. Had Jefferson requested them but found Mary too distracted to reply? Why had he not requested the cooperation of W. P. C. Barton? Had Jefferson learned the nephew had fallen from Mrs. Barton's favor with the publication of his *Florae Philadelphicae Prodromus* and its dedication to Muhlenberg? Jefferson knew more of the friendship of the Bartons with Corrêa than has

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3467 Cheyney, *History*, 204–205.
3468 Carson, *History*, 135; Davis, "Corrêa," 245, fn. 59.
3469 John Fothergill Waterhouse to William Tilghman. Gilbert Collection, CPSP.
3470 APS, "Minutes," 464.
3471 Manuscripts, Hunt Institute for Botanical Documentation.
3472 William Tilghman, *An Eulogium in Commemoration of Doctor Caspar Wistar...* (Philadelphia, 1818), 33.
3473 Gross, *Lives*.
3474 Tilghman, *Eulogium*.

been left in the record. Barton had several recorded conversations with the savant, although no letters seem to have passed between them, and Corrêa was a dinner guest a number of times.

A friend of the natural sciences, by profession a diplomat, "the excellent botanist from Portugal,"[3475] whom Barton in his younger days would have welcomed more engagingly, arrived in Philadelphia early in 1812, exiled from both his own country and from France. He was the genial, polished, witty gentleman, the Abbé José Françisco Corrêa da Serra (1750–1823), (Figure 37) born in Serpa, Portugal.[3476] In 1772 he had become a correspondent of Linnaeus, and in 1779 with encouragement from Duke John Lafoens he took part in the establishment of the Royal Lisbon Academy of Sciences. A political refugee during the turmoil of his native country, he lived for twelve years in Paris and Rome, returning to Lisbon in 1788, when he was elected Perpetual Secretary of the Academy. He had then surely met the young American, Benjamin Smith Barton, on his way home from Edinburgh and London.

In 1801 Corrêa was in London where he met Banks, Lettsom, and James Edward Smith, all of whom had met Barton during his student years abroad. With all of them Corrêa maintained a correspondence. A man of "so much taste and extensive literature," in Paris, Corrêa had introduced Smith, while on his continental tour in 1786, to Antoine Laurent de Jussieu, distinguished botanist and critic of Linnaeus.[3477] Corrêa now wrote to Smith from Paris, 31 October 1811, "In a few weeks I hope to be out of this continual close confinement, from Phila I will repay my debts to you by writing you long letters."[3478] He had also befriended an American traveler. In 1806 while W. D. Peck was in Paris in late June and early July, he visited with Corrêa, who aided his meeting several French botanists. Corrêa undoubtedly had acquired a good deal of knowledge of American naturalists from these contacts.

Before setting sail on the *U.S. Constitution*, he visited Joel Barlow, American minister in France, who introduced him by letter to James Madison, stressing his learning and science. David B. Warden, consul in Paris, wrote to Wistar suggesting that Corrêa be elected to the American Philosophical Society, which he was 19 January 1812. François Michaux wrote glowingly to John Vaughan, and there were other letters of praise. Corrêa arrived in Norfolk 19 February 1812, and soon proceeded to Washington, where he spent some time with the country's leaders, then proceeded to Philadelphia, where on 20 March he attended a meeting of the Society at which Barton and "12 others" were present. Neither seems to have left a record of the impressions each had of what the years had done for the other, since surely they had met in 1789 during the time that Barton's journal of his voyage home on the *Apollo* is a blank.

After a friendly meeting, in his undated "Bot. notes no 3" Barton wrote: "My learned friend Mr. Corrêa de Sera has suggested to me the propriety of planting Cytisus Laburnum and Melia azederach, before the doors of our houses, and in our streets in place of Lombardy Poplar. Cytisus it is true, bears our climate very well, and is a most [missing]." One day in June 1812 Barton noted "Mr. Corrêa is decidedly of opinion that Penstemon is truly a genus of plants distinct from [the Turtlehead] Chelone. He has examined different species, & among others P. pubescens." On 12 June on the verso of a page of his manuscript "Concerning Ladies Botany" he noted that "Mr. Corrêa thinks it not improbable that the 'Hedera alba' of Virgil is Linne's Clematis vitalba which he says is very common in Italy, climbing the houses, cottages, hedges &c, and which he mentions as a beautiful plant." The next day he wrote, "I showed Mr. Corrêa our V[eronica] Becabunga, now <u>abundantly</u> in flower, near the falls of Schuylkill: or rather some distance up the Wissahickon, where I observed it today. He says it

3475 Darlington, *Baldwin*, 78, and passim.
3476 Davis, "Corrêa." APS *Portraits*, 18–19, fig. 34.
3477 Smith, *Tour*, 1: 340–341.
3478 Smith, *Correspondence*, 3: 193.

is the same as that of Europe: viz. V. of the same name. He takes our Asplenium Trichomanes [fern, Maidenhair spleenwort] to be the same as the European."

Again "Bot. Notes No. 7" for 18 June reads:

> *Mr. Corrêa tells me that he has recently found Galium triflorum is flowering in the vicinity of Philadelphia: in a timothy field, rather a wet place. He seems confident that he has also seen, in moist shaded situations, G. arparine, the same as in Europe: and Muhlenberg told him it was aparine. Dont he mistake it for G. asprellum? He says Cheledonium majus [sic Chelidonium] is exactly the European. He thinks Aesculus and Pavia ought not to be divided: at least, until more species are discovered. He considers the mere circumstance of echinated or non-echinated pericarp, as no more than pubescence or not pubescence. He says Viola is wrongly put by Jussieu in Cisti, and that Fumaria is now in a distinct order from Papaver an order: viz Caprioides.*

Also undated was Barton's 1814 note:

> *Thesis: Flowers of American pls. (indigenous spp.) have feeble odors, also odors of spp. introd. into US from Eur. etc. have lost their odors in cultivation.*
>
> *Assertions of Mr. Corrêa de Serra, a learned Portuguese gentleman, who has passed more than two entire years in the United States, during which time he has doubtless made many interesting observations on physical history of this region, which it is to be hoped, he will one day communicate to the world...*

Plant introduction had always been a favorite subject for Barton.

Corrêa spent much of the years 1812, 1813, and 1814 travelling around the country, whenever he was in town attending meetings of the American Philosophical Society and the Philadelphia Linnaean Society, to both of which he had been elected. Their meetings came to an end when on 28 June Corrêa left for New York, and Barton in the spring left for Europe. As late as 1 December 1814, however, in "Bot. Notes No. 7" Barton noted that "Mr. Corrêa says the two great prevailing families of plants in Kentucky are the Labiatae and the Syngenesiae. He says the Kentucky flora is the Flora of Virginia..."[3479]

Barton soaked up all the information his learned friend was happy to impart to him. He may have let his visitor talk on, questioning him at times, but making few comments himself. Had they discussed the new Natural System of Jussieu of which Corrêa was a devotee? Barton had expressed his belief in his *Discourse* that the Sexual System of Linnaeus was faulty and would not endure, but he was now more intent on collecting knowledge of new plants than in rearranging their classification. How different might have been the story of North American botany had Corrêa appeared in Barton's life during his enthusiastic prime—in the early 1790s. Then Barton's botanical background, enriched under the Abbé's council might have developed a flora under the Natural System—these two, for whom botany was their greatest joy, enjoying field and herbarium in company.

Corrêa visited Muhlenberg in Lancaster a number of times, and found him relaxed, free, and eager to discuss the problems of classification even though Muhlenberg continued to publish in the old system.

It may well have been that Corrêa did not see Barton's herbarium, the professor not encouraging him to linger beyond a certain modicum of time. Lewis's natural history journals

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[3479] Barton papers, APS, Botanical notes.

had only recently come to hand, and Barton had promised Jefferson their early publication—this in addition to seeing several of his own works through the press, his university lectures, his patients, and the societies in which he held office. For relaxed botanical conversations in Philadelphia, Corrêa turned to Zaccheus Collins (1764–1831), Quaker merchant, philanthropist, especially interested in botany, and an active member of the American Philosophical Society, to which he had been elected in 1804. He was also active in the newly founded Academy of Natural Sciences.

By 1812 wit and humor had lost much of their charm for the hard-pressed and obviously suffering investigator who had promised the country so much and who still had so many unfinished projects. Barton was after facts. Can it be he shared the impression the "irascible, loveable" publisher Matthew Carey recorded in his autobiography that Corrêa's high reputation for wit, humor, pointed sayings, and profound remarks "regarded as impromptu," were the result of "great preparation and study...ready to be fired off when occasion demanded"? Carey concluded that "a nice tact, great address, skilful management, and a commanding tone, had accomplished for him, what they have effected for thousands before him; that is to say, operated with the effect of a microscope on the endowments bestowed on him by nature."[3480] Jefferson, however, to whom Corrêa became a special friend, considered him "the most learned man I have ever met in any country."

Corrêa, intending to return to Europe in 1813, had paid a visit of over a month in July and August to Jefferson at Monticello[3481] where amusements, Jefferson reminded him, "are such as you know which, to you, would be principally books and botany."[3482] Corrêa was to write later that "No moment of life can i consider more precious than those i would pass in your company." He then returned to Boston to set sail, and while awaiting ship accompanied Bigelow on a botanical excursion about the city, and Bigelow recalled that he "did me the honor to peruse my herbarium, and aid me with explanations."[3483] On 9 November Muhlenberg reported to Baldwin that his "excellent botanical friend," Corrêa "had changed his mind, and will remain in America for some time."[3484] Actually Corrêa's financial situation abroad had improved with political developments, and he chose for his residence the city he liked best after Paris: America's leading intellectual center, Philadelphia.

On 8 February 1814 he was elected to the Academy of Natural Sciences in Philadelphia. Charles Wilson Short wrote 15 April to his brother, John Cleves Short, in Cincinnati, Ohio:

"There is now boarding in the same house with me, an old gentleman, M. Corrêa de Serra a Portugese of almost universal information, and in every sense, a profound scholar whose company is eagerly sought by all the literate of Phila—He speaks of paying a visit to Kentucky and Ohio this spring—if he passes through Cincinnati I will give him a line to you—he would be much pleased to be shewed what is worth seeing in your town, and no doubt you would be highly gratified by his conversation—Walsh,[3485] the famous Editor of the American Review of history & politics accompanies Mr. Corrêa."[3486]

William Darlington was also boarding in the same house. Corrêa planned on his way to make another visit to Monticello, then proceed through what is now West Virginia to Kentucky and Ohio, returning by way of Pittsburgh. The route, however, was changed. Instead he and Walsh went through Chambersburgh, before reaching Pittsburgh, then descending the Ohio. Their stay of several weeks in Lexington, Kentucky, impressed him greatly with the land, the people, and a promising future. Having to retrace their steps to

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3480 Matthew Carey, *Autobiography*, Eugene L. Schwaab, ed. (Brooklyn, 1942), 90–91.

3481 Davis, "Corrêa," 99.

3482 Davis, "Corrêa," 128.

3483 George E. Ellis, "Memoir of Jacob Bigelow," reprinted, *Massachusetts Hist. Soc. Proc.* (1880).

3484 Darlington, *Baldwin*, 114.

3485 Robert Walsh (1784–1859) commenced the publication of the first quarterly in the U.S.; Richard J. Purcell in *DAB*.

3486 C. W. Short collection, Manuscript Collection, Filson Club, Louisville, Kentucky.

Pittsburgh, which they reached 20 September, they missed Monticello. However, on a later trip in 1815 he visited Jefferson, leaving 16 October with Francis Walker Gilmer and Robert Walsh.[3487] They travelled northward from Monticello via Richmond, Washington, and Lancaster, where they visited with Muhlenberg, then returned to Philadelphia. The few botanical specimens that Corrêa collected he gave to Walsh. Each year thereafter until his return to Portugal in 1820 he made at least one visit to Monticello. In 1814 he visited New York State and Vermont north to the borders of Canada, pausing at Lake George, but he missed his goal, Niagara Falls, because of the War. Back in Philadelphia he reported that he had traveled 346 leagues.

While Barton was in Europe, Corrêa delivered a series of botany lectures at the American Philosophical Society. That year he also published his *Reduction* of Muhlenberg's *Catalogus* to Jussieu's system of plant classification. After Barton's death he repeated the series giving thirty lectures "with great applause" from 10 April until the end of June 1816, and was offered the Chair of Botany and Natural History in the university, but declined.

W. P. C. Barton honored Corrêa without mention in his *Florae Philadelphicae Prodromus*, 86, when he described *Malaxis corrêana* from the city as new. His Corrêan *Malaxis* is now identified as *Liparis loeselii*.[3488]

Barton, at Society meetings and in conversations, made but a modest impression on Corrêa for, indeed, he considered Muhlenberg and Bigelow the two leading botanists in the country, with Elliott and Nuttall, and did not include Barton. In 1813 he wrote to James Edward Smith that "Botany is still in her infancy in America; some amateurs are scattered throughout this continent, and some european rather traveling gardeners than real botanists, are collecting plants and shrubs and trees for the gardens of European rich men, or for the nurseries."[3489]

Augustin-Pyramus de Candolle left reminiscences of Corrêa in his autobiography, and Asa Gray saw fit to include them in his "Biographical Sketches."

> [Corrêa] *possessed the singular faculty of knowing everything apparently without labor. It is only the people of the south who can thus combine great facility with profound idleness. The latter prevented his publishing anything beyond small dissertations, quite below his talents; but in conversation all his various knowledge and his ingenious views were charmingly exhibited. In these days Humboldt and Cuvier often came to my lodgings, where they occasionally met Corrêa. Although their celebrity was far above his, and justly so, on account of their published works, yet Corrêa always got the advantage over them; and it was by no means the least of the enjoyments of our sociable little dinners to see the sort of deference, and even fear, which Cuvier and Humboldt exhibited in the announcement of their opinions before Corrêa, who, with the grace and sly maliciousness of a cat, would at once expose their weak sides...he used his vast stores of knowledge with a severe logic and rare sagacity. He spent many hours in my herbarium where the subtle perspicacity which he brought to bear at a glance upon plants, often wholly new to him, taught me much of the art of observing, and especially of combining observations in botany.*[3490]

3487 Davis, "Corrêa," accounts for both Gilmer and Walsh, passim.

3488 [*Maxalis correana* W. P. C. Barton, *Fl. Philad Acad.* 86, 1815, now synonymized to *Liparis loeselii* (L.) Rich., 1817 [1818], the Yellow Wide-Lip Orchid. IPNI. ITIS.]

3489 Davis, "Corrêa," 112.

3490 Gray, *Scientific Papers*, 301–302.

For retrieving Lewis's journals, Jefferson now turned to Corrêa in Philadelphia, 1 January 1816:

> *...The death of Dr. Barton revives my anxiety to recover the MS. journals of Capt. Lewis, for the satisfaction of his family; and may at the same time facilitate it. He had promised me sacredly that he would see to it's restoration; and as you were so kind as to say you would attend to it on your return to Philadelphia, I now earnestly entreat your aid for this object, knowing nothing of what is doing, or intended to be done, as to the publication of the papers respecting the natural history & geography of the country, you will oblige me by any information you can obtain on this subject. The right to these papers is in the government as may be seen by the instructions to Capt. Lewis, they were left in his hands that he might derive to himself the pecuniary benefit of their publication, on the presumption they would certainly be published...*[3491]

On 12 February 1816 Corrêa, home from his excursion, answered Jefferson:

> *...Now for Captain Lewis's papers, I have found it a difficult work, but you may rely on my zeal and assiduity to fullil your wishes. Several times have i called on Mrs. Barton and twice on Mr* [Edward] *Pennington her brother, who has great influence on her, and assists her in the arrangement of her affairs, but i am not more advanced than in the beginning. The Dr has left such an immense heap of papers, and in such disorder the reclamation of papers and books are so many that i conceive how the poor lady is embarrassed how to do. It seems that for a great number of years the Drs. library and cabinet followed the same law that Dante has inscribed on the gate of hell Yesbe di Speranze o voi che entrate.*[3492] *But I hope there will be an end to this suspense; you will know the result.*[3493]

Meanwhile Mary and her brother Edward were putting books and papers into what order they could. Corrêa wrote Jefferson 29 March 1816:

> *At last Mrs. Barton has sent me a little morrocco bound volume, part of Capt. Lewis journal containing his observations from April 9 of 1805 to February 17, 1806, and the meteorological observ. for July August September 1805, together with the drawing of a quadruped which he calls the Fisher. The chaos of this library begins to clear, by the separation of printed books which are sold to the hospital. I doubt not the remaining papers of Capt. Lewis may be found, but you could help me much by sending me a description of their external appearance, and their probable volume, because Mrs. Barton who acts in all this very honestly (but does not permit anybody to search the papers of her husband, but by what I understand only herself and her brother who is also a very honest person) will be much helped in finding them. In the meantime I expect your directions about what I am to do with the volume I have got, and the others that may appear.*[3494]

3491 Davis, "Corrêa," 140.

3492 ["All hope abandon, ye who enter here." Dante Alighieri, *The Divine Comedy (Inferno)*.]

3493 Davis, "Corrêa," 144. Jackson, *Lewis and Clark*, 608.

3494 Davis, "Corrêa," 148.

Jefferson responded from his retreat, "Poplar Forest" in Bedford County, Virginia, 26 April 1816, with a detailed description of the journals, papers, and map, and that Allen and Biddle might still have some of them. He mentioned the common interest in Indian languages shared with Lewis, and the vocabularies that Lewis had hoped to publish himself. It was thought that "Doct. Barton, who was particularly curious on this subject, and published on it occasionally, would willingly receive and take care of the papers after Capt. Lewis' death, and that they are now among his papers."[3495]

In dictating the disposition of his manuscripts Barton had specified that all the "sheets" of his projected new edition *New Views* were not to be published, but sent to the Antiquarian Society of New England in Worcester, Massachusetts, through the attention of Duponceau. Lewis's records of the languages of Indian tribes he had so carefully made were among these, which may have been the reason Barton had not wanted this edition to appear lest it be thought he was claiming authorship for material used, but not yet acknowledged. In December of 1817 Jefferson sent to Duponceau his own surviving Indian language notes, which had been retrieved from the James River after his trunk containing them had been stolen on its way to Monticello in about 1806. Duponceau now had not only Zeisberger's and Heckewelder's, but also Lewis's, Barton's, and Jefferson's surviving notes for his numerous publications on Indians and Indian languages. Summing up the Lewis papers, Jefferson concluded to Corrêa:

> *They are the property of the government, the fruits of the expedition undertaken at such expense of money and risk of valuable lives. They contain exactly the whole of information which it was our object to obtain for the benefit of our own country and of the world. but we were willing to give to Lewis and Clarke whatever pecuniary benefits might be derived from publication, which would be better if done under their direction. but the death of Capt. Lewis* [in 1809], *the distance and occupation of General Clarke* [Governor of Missouri Territory], *and the bankruptcy of their bookseller Joseph Conrad* [in 1811], *have retarded the publication, and rendered necessary that the government should attend to the reclamation & security of the papers. their recovery is now become an imperious duty. their safest deposit as fast as they can be collected, will be the Philosophical Society...*
>
> *To you, my friend, apology is due for involving you in the trouble of this enquiry. it must be found in the interest you take in whatever belongs to science, and in your own kind offers to me of aid in this research.*[3496]

On 12 May Corrêa reported "The only part which i had recovered i had forwarded to you by your excellent grand daughter when she was here," but on 16 June:

> *Three other pocket books of Capt Lewis have been found among the papers of Dr. Barton, and that was all that existed in the Drs. hands. but all* [Lewis's] *remaining papers concerning that expedition I have found deposited with Mr. Nicholas Biddle, who tells me he is ready to give them, on receiving an intimation to do so from Gel. Clarke from whom he had them. You see i have done every thing in my power to satisfy your wishes, and you may be sure that will be the case in every occasion to serve you.*[3497]

3495 Davis, "Corrêa," 149.
3496 Davis, "Corrêa," 149–150.
3497 Davis, "Corrêa," 150.

Not aware that Pursh's *Flora* would appear in 1814 with descriptions of 124 of the 200 plant specimens collected by Lewis and Clark, and 13 illustrations of those plants, Jefferson had predicted to Humboldt in December of 1813:

> *The botanical and zoological discoveries of Lewis will probably experience greater delay* [than the narrative], *and become known to the world thro' other channels before that volume will be ready. The Atlas, I believe, waits on the leisure of the engraver.*[3498]

The fate of some of Barton's plant specimens is clarified in a letter from Dr. Charles Pickering (1805-1878), an active member of the Academy of Natural Sciences, and later also a member of the Wilkes Exploring Expedition, to Rev. Lewis David von Schweinitz (1780-1834), Moravian clergyman and botanist at Salem, North Carolina. It was dated 2 August 1831 and reads in part:

> *I do not know that I informed you of the discovery of Dr. B. S. Barton's herbarium, safely tumbled away in Mr. Vaughan's garret, where it has been baking for these ten years. I was much gratified in turning it over, for it contains all Pursh's Virginia plants, all his v.vs., accompanied with the labels bearing the names of those persons who sent them to Dr. Barton! It is not however very complete but seems to have been formed with reference particularly to his intended Flora Virginica. I did not before suspect that Pursh was such an inveterate pirate.—*[3499]

Zoological specimens had gone to Peale's Museum, where they were described by Alexander Wilson, George Ord, Richard Harlan, Rafinesque, and others. Barton had announced several mammals in *Philadelphia Medical and Physical Journal* in 1805 and 1806.

3498 Jackson, *Lewis and Clark*, 596.

3499 MS 438 #242, ANSP. Both Pickering and Schweinitz are in *DAB*.

Appendix I

Bibliography of Barton's Writings

"Blow out, correct, insert, refine
Enlarge, diminish, interline"
—Jonathan Swift

Barton's bibliography presents a portrait of an accomplished proud citizen of a new country, handicapped by poverty and ill health. As a physician he ranks well with his associates in the medical treatments of the time, and he was particularly highly regarded in New England. He may well have lacked the bedside manner of Rush, or the boldness and self-confidence of Caldwell, but he was more cautious in the use of the poisonous remedies used then and more scientific in his approach to research of new materials and possibilities among native plants. He was more acutely aware of the similarities of man and the lower animals. He came so very close to admitting evolution, but veered cautiously away.

Barton was a perfectionist for fact, often revising, but, harried and hurried, he did not pause to perfect his style, which was so often diffuse. Yet his lectures to his medical pupils often evinced his love of teaching and of his subject. Early in life he became a book collector, a necessity for one working in a new world, yet a natural passion. From need for covering the vast area of the new country, and emulating European patrons, he supported travels of both Pursh and Nuttall, adding to their lasting fame. He had been covetous of presenting American natural history to the world, and he was bitter that Europeans, Schoepf, Michaux, Volney, and Pursh, pre-empted that honor.

Yet the record of his publications and his influence as a teacher of medical and natural history students is, for the time, impressive.

Although George Ord wrote in "Wilson" that "the early writings of but few authors are worthy of being read, except for the purpose of tracing the progress of the mind," DeWitt Clinton in his *Discourse* (1815), 56, wrote, "I regret that I had not before the benefit of this ingenious and learned work having been often instructed by other writings of the distinguished author," referring to Barton.

Each item in this bibliography is designed to exhibit a little of the man—his accomplishments, his philosophy, his knowledge, his esteem of men of learning, his perception, his caution. Some of our entries are of mere notes, such as on items from his *Philadelphia Medical and Physical Journal*, which are cited not to build up the bibliography but to illustrate his penchant as an educator.

The Royal Society Catalogue lists 26 titles of Barton as in the Society's library. We assume most of them were sent to Sir Joseph Banks.

In the following list of Barton's works we have included *Prodromus* (1805), *Flora Virginica* (1812), and *Geographical View* (1809), although technically they were only printed and distributed to friends abroad. These works were not completed; they are evidences of his frustrated ambition.

W. P. C. Barton wrote in his edition of *Elements*, 30:

> *These, gentlemen, are all the works which have been printed by Barton. Some of them have never yet been published, and many of them designed entirely for the perusal of his numerous European*

correspondents. As it may be supposed, these works obtained for him great notoriety in Europe where he is honored and respected.

Barton hoped for encouragement from his European friends, and sought solace in addressing papers to Europeans to assuage the antagonisms and lack of financial support he met in his own country.

As a recent reference we have added numbers from Tucher, compiler, *Natural History in America*. Our own numbers are to be found at the lower left end of each of the entries definitely authored by Barton.

1787

Observations on some Parts of Natural History, to which is Prefixed an account of several remarkable vestiges of an ancient date, which have been discovered in different parts of North America. Part I. By Benjamin Smith Barton, Member of the Royal Medical Society of Edinburgh, &c.

"Well then may it be inferred that there are large chasms in the annals of many countries; and that we have obtained but an imperfect acquaintance with the fortune of governments, and the vicisitudes of the species. Dunbar." London: Printed for the Author, and sold by D. Dilly, in the Poultry.

2, v. 7-76, 1 folding leaf of plates. 8°.

Reviews: anon. *Monthly Review* (1787): "the production of a very young man, written chiefly as a recreation from the laborious studies of medicine during a bad state of health...a curious tract...the other three, which will complete the work, are to be published in a few months." *Med. Chir. Z.* 1 (1817): 151 (not seen).

Copies: APS; ANSP (gift of Mrs. Mary Barton); BPL (T. P. Barton copy); Denver Bot. Gard. (James J. Waring copy); MBG (Ewan Libr. copy: "Dr. Playfair will greatly honour the author by accepting this little trifle. September 3d: 1788" on verso of t.p.); New York Acad. Med.: "To Isaac Smith M.D. of Trenton N.J."

Sabin, *Dictionary*, 3820; *TL-2*.

Advertising leaflets were distributed with *Analytical Review*.

All published. Dedicated to Wm. Barton "by his friend and brother." (Figure 27).

In his final illness, Barton directed that this early work not be reprinted.

Tucher Number 149.
Ewan Number 1.

[*Prodromus Florae Pennsylvanicae.* London, C. Dilly, 1787].

Q pp. 115-122.

Barton began publication of a florula while a student at University of Edinburgh, but, his time curtailed, he took the sheets to Philadelphia. He mentions the work in his letter to William Bartram 18 February 1788 as in press, on 19th in a letter to his brother William. Dilly in a letter to Barton in Philadelphia mentions it. Barton's plans for a flora were continually mentioned over the years and revived in 1805. Sheets with Pursh's handwriting of corrections and additions are dated 1806. The *Prodromus* was referred to in Barton's *Flora Virginica* (1812). See MacPhail, *Barton*, 37-38.
Ewan Number 2.

"Alterations in the Colour of a Negro Woman. Communicated to the [Edinburgh] Royal Society." *Scots Mag.* 49 (Sept. 1787): 424.

Copy: Barton papers, APS.

The subject had, no doubt, been suggested by Barton's editing of Samuel S. Smith's *An Essay on the Causes...* (Edinburgh, 1788); see also our no. 10.
Ewan Number 3.

"Ohiopyle Falls," *Columb. Mag.* 1 (1787), February frontispiece, 284.

Rittenhouse had written a description and made a sketch, which Barton completed and submitted, for an engraving. In southwest Pennsylvania, the Falls are near the Youghiogeni River.

Ewan Number 4.

"Fort McIntosh," *Columb. Mag.* 1 (1787).

Barton's drawing.

Ewan Number 5.

1788

"A View of a Swallow or Pit, at Sinking Spring Valley, State of Pennsylvania," *Columb. Mag.* October [2] (1788): frontispiece.

Barton's drawing.

Ewan Number 6.

"A View of Fort Robertson, in Sinking Spring Valley, State of Pennsylvania," *Columb. Mag.* December [2] (1788): frontispiece, opposite 703.

Barton's drawing.

Ewan Number 7.

"A Description of Juniatta River in the state of Pennsylvania (embellished by an elegant drawing)," *Columb. Mag.* [2] (1788): 417–418.

The article signed "B." The engraving, the frontispiece for August.

Ewan Number 8.

"A Description of Bald Eagle Valley, its natural curiosities, mines, springs, Etc., accompanied with an elegant engraving," *Columb. Mag.* 2 (1788): 489–492.

The engraving the frontispiece.

Ewan Number 9.

"Introduction" to Samuel S. Smith, *An Essay on the Causes of the Variety of Complexion and Figure in the Human Species, to which are Added Strictures on Lord Kaim's Discourse on the Original Diversity of Mankind*, Edinburgh and London, 1788.

Review: *Crit. Rev.* 66 (Oct. 1788): 308–325.

Barton's preface by a "Gentleman of the University of Edinburgh," dated Edinburgh, April 1788, stated the text had been "carefully corrected from a copy containing a great number of alterations, &c." in Smith's own handwriting, with which Barton was "fortunately furnished." Smith had probably entrusted a copy to Barton to take to Edinburgh, there to see to its publication. Whether Barton with his keen interest in the subject, and with an eye to replenishing a diminished purse, had sought permission to make corrections and additions is not clear. That Smith did not completely appreciate the young naturalist's editing and alterations is hinted in his letter of 1811 to Barton.

Ewan Number 10.

1789

"Some account of the American Philosophical Society held at Philadelphia, for the Promotion of Useful Knowledge," *Columb. Mag.* 3 (1789): 703–706, 763–766.

Signed "B."

Ewan Number 11.

"On the pronunciation of Latin," *Columb. Mag.* 3 (1789): 717–718.

Signed "B."

Ewan Number 12.

["Thoughts on the Crotalus horridus, or Rattle-snake" by Philo-Naturae, *Columb. Mag.* January 3 (1789): 32].

McAtee believed this probably Barton's, but the style does not resemble his. Did an editor revise the young author's text?

Proposals for Printing by Subscription, an Historical and Philosophical Inquiry into the Original, Nature, and Design of various Remains of Antiquity... Philadelphia December 22d, 1789.

Broadside, 11½" × 6½" (Figure 46).

The copy sent to Thomas Pennant 30 August 1790 has a note on the verso: "An edition of this work will be published in England. The American edition will not make its appearance so early as expected.—B.S.B." (Barton papers. APS.)

Known copies of the *Proposals*: to Jefferson, Belknap, Banks, and Anders Sparrman, who wrote from Stockholm 18 May 1791 that he had found six subscribers. (BPL).

Ewan Number 13.

1790

"Account of Fort McIntosh—with a plate." *Columb. Mag.* January (1790): 3, the frontispiece an engraving of Barton's drawing.

Signed "B."

Barton refers to the drawing in his "Journal" of his western trip.

Ewan Number 14.

"Explanation of the Plate exhibiting a View of several Public Buildings in the City of Philadelphia," *Columb. Mag.* January (1790): 25–26, with the plate opposite p. 25.

Ewan Number 15.

1792

*An Account of the most effectual Means of preventing the Deleterious Consequences of the Bite of the Crotalus Horridus or Rattle-Snake...*extracted from the Third Volume of the Transactions of the American Philosophical Society... Philadelphia: Printed by R. Aitkin & Son, Market Street. M. DCC. XCII.

[4]–19. 8°.

Copies: APS; BPL; Natl. Libr. Med.

This was a preprint.

"Read Aug. 19, 1791" (p. [4]). Two copies were sent by BSB to Pennant, one mentioned in his letter of Feb. 27, 1792; one copy inscribed to Pennant.

Ewan Number 16.

1793

"An Inquiry into the question, whether the Apis mellifica, or true honey bee, is a native of America." *Trans. Amer. Philos. Soc.* 3 (1793): 241–261.

Sabin, *Dictionary*, 3811; RSC; copy sent to Pennant.

Read before the American Philosophical Society 1 February, 1792.

Barton concludes the bee was introduced. He cites Jefferson, Columbus, Purchas, Lionel Wafer, José da Acosta as having found no words for honey bee or beeswax, nor

does he find words in any of the Indian languages he has studied. The bee is not mentioned in William Penn's 1683 account of Pennsylvania. Barton's "friend William Bartram" agrees with him.

"Perhaps it will be thought that I have devoted more time to this inquiry than the subject merited. I will allow, that the question is not of much consequence to mankind, at large; but to a society of philosophers, every elucidation of a disputed point in natural history cannot but be, in some degree interesting." (p. 260.)

Ewan Number 17.

"A Botanical Description of the Podophyllum diphyllum of Linnaeus in a letter to Carl Peter Thunberg..." *Trans. Amer. Philos. Soc.* 3 (1793): 334–338, illustrated.

Copy: RSC.

Signed 29 April 1792. Read before the Society 18 May 1792. On p. 342 he introduced the name *Jeffersonia*. From roots given him by Wm. Bartram, he and Bartram "carefully examined the plant...and together made the drawings which accompany the letter."

Ewan Number 18.

"An account of the most effectual means of preventing the deleterious consequences of the bite of Crotalus Horridus, or Rattle-Snake." *Trans. Amer. Philos. Soc.* 3 (1793): 100-115.

Read before the Society 19 August 1791.

Ewan Number 19.

1796

A Memoir concerning the Fascinating Faculty which has been ascribed to the Rattle-Snake and other American Serpents... Philadelphia. Printed for the Author, by Henry Sweitzer. 1796.

vi, 7 + 70. 8°.

Reviews: S. L. Mitchill, *Med. Repos.* 1 (1797): 86–93; Zimmermann, see no. 27; and Blumenbach, see no. 28.

Copies: APS; ANSP, gift of Mrs. Barton (*J. Acad. Nat. Sci. Philadelphia* 1 (1817): 203); Clements Libr., Univ. Michigan, presented to Samuel Coates; PH, presented by the author; New York Acad. Med.; Antiquariaat Junk, *Catalogue* 253, no. 25 (1989), listed a copy, the title on the cover in a scribe's hand.

Sabin, *Dictionary*, 3816; see also our nos. 27, 28, 32; for *Supplement* see our no. 40.

The first herpetological work published in America, the paper having been read before the APS 4 April 1794, and "considerably enlarged."

Preface dedicated to "the late amiable and ingenious Dr. Rittenhouse."

Jefferson acknowledged receipt of this *Memoir* and wrote approvingly of Barton's views, adding that he believed hawks also exercised a power of fascination over their prey.

John Bartram's letter to Peter Collinson on the subject had been published in *Century Mag.* 35 (1765): 511–514. Barton wrote that Linnaeus, Gmelin, Kalm, Samuel Johnson, and "Mr. [J.] Bartram of Phila." entertain the view of the power of fascination. J. E. Smith and Thomas Pennant "entertain suspicions of its truth." Barton does not hesitate to call the view a "prejudice."

Tucher Number 147.

Ewan Number 20.

Papers relative to certain American Antiquities by Winthrop Sargent, Secretary to the Territory of the United States, Northwest of the River Ohio; and by Benjamin Smith Barton, M.D. Philadelphia, Thomas Dobson. 1796.

iv, 39. 4to. 2 plates drawn by Barton and engraved by Vallance.

Sabin, *Dictionary*, 3821, 77038; Evans 30038.

Copy: APS, presented by Barton 10 March 1797.

In "Preliminary Discourse" in *New Views*, ed. 2, xcvi, is Barton's footnote, "See Papers relative to certain American Antiquities by Winthrop Sargent, Esq. and by Benjamin Smith Barton p. 9."

Ewan Number 21.

1797

"Von der bezubernden Kropf," *Amer. Mag.* (Hamburg, 1797).

Not seen by us. He had sent the account to Professor Blumenbach, then dedicated his Philadelphia edition to him.

Ewan Number 22.

"Hints relative to the Stimulant effects of camphor on vegetation." *Ann. Chim. (Paris)* 23 (1797): 63–67.

Not seen. Copy listed in RSC.

Barton had read this paper before the APS 26 Sept. 1794. It appeared in this journal before it appeared in the *Trans. Amer. Philos. Soc.* in 1799.

Ewan Number 23.

New Views of the Origin of Tribes and Nations of America... Philadelphia. Printed for the Author by J. Bioren. 1797.

xii, cix, 83. 8°.

Copies: APS, presented by Barton 21 July 1797; ANSP; HEH, "original boards, J. Stoddard" on t.p. a purchase at De Puy sale (1919); LC; UCB; University of Oregon, "For Mr. Pennant, from his sincere friend, &c the Author." "The Gift of Mr. Pennant. April 16th 1819," dealer's mark 8326, dentelle, fine, bound in manner of Coe library.

Sabin, *Dictionary*, 3819: "The first philological treatise on American philology by an American."

Opposite t.p.: "This work entered according to law."

Dedicated to Jefferson, 21 June 1797. Comparative vocabularies, p. 1–83. Withdrawn by Barton for his revised 1798 edition. Price. $1.25.

Barton sent two copies to Russia according to his letter to Heckewelder 13 March 1798. Were they to Pallas and to Princess Dashkov, or one to Empress Catherine?

Ewan Number 24.

1798

New Views of the Origin of the Tribes and Nations of America. By Benjamin Smith Barton, M.D., Correspondent-Member of the Society of the Antiquaries of Scotland; Member of the American Philosophical Society; Fellow the American Academy of Arts and Sciences of Boston; Corresponding Member of the Massachusetts Historical Society, and Professor of Materia Medica, Natural History and Botany, in the University of Pennsylvania. Philadelphia: Printed, for the Author, by John Bioren. 1798.

"The Second Edition, corrected and greatly enlarged—Copyright secured."

xxviii, cix, 133, 32. 8°.

Reviews: *Allg. Lit.-Z.* 26 May 1809: 209–229. Caldwell, signed "C," *Port Folio* ser. 3. 7 (1812): 507–527, disagreeing with most of Barton's ideas.

Copies: APS, "first edition now withdrawn," 23 Nov. 1798 (APS "Minutes," 274); ANSP, donated by Mrs. Barton; BPL; LC with *Allg. Lit.-Z.* review tipped in; New York Acad. Med., "Inscribed for Doctor Isaac Smith, from his friend, &c. The author"; Stockholm, Kongl. Vetensk. Bibliot. (in original boards); PH.

Jacob Wagoner, Chief Clerk, announced to Barton that a copy had been deposited in the office of the Dept. of State, 9 August 1798.

"The Appendix containing Notes and Illustrations," 32 pp., is the largest addition, and there are a few changes in the lists of words. There is the same dedication to Jefferson.

Barton listed 82 copies sent to booksellers (Barton papers, APS.)

New Views was cited by Anders Sparrman, *Resa till Goda Hopps-Ud Sodra Pol-Kretsen och Onkring Jorcklotet samt till Hottentott-och Caff er-landen åren 1772-76* (Stockholm, 1818, 2 vols. in 3), 2 (2): 95.

New Views, ed. 2 (1798), xxiv, "Though I may feel the innocent pride of one who supposes he has made a discovery, I shall not be mortified to live to see my labours, in a great measure, forgotten in the happier labours of some future investigator."

Ewan Number 25.

Collections for an Essay towards a Materia Medica of the United States. Read before the Philadelphia Medical Society, on the twenty-first of February, 1798. By Benjamin Smith Barton...Philadelphia for the Author, by Way and Groff. 1798 [Part I, ed. 1].

vii, 49. 8°.

Review: L. Kollock in *Med. Repos.* 2 (1798): 72-75: "and what augments our satisfaction is, that this is the undertaking of a native American."

Copies: APS, manuscript notes on the cover; BPL; Duke Univ. Med. Center Libr.; Brown Univ.; Hunt Institute for Botanical Documentation; LC, "C.P. Thunberg" on t.p., LC stamp: 1883, paper bound, contemporary mottled paper; New York Acad. Med.; PH, "For the library of the Pennsylvania Hospital the author"; LCP; Natl. Union Cat. lists 23 depositories.

Pritzel 435; *TL-2*; Sabin, *Dictionary*, 3804.

"Dedication" to James Edward Smith [iii]-iv, signed 12 March 1798.

Receipt of "pamphlet" by Samuel W. Smith for the APS 19 March 1798.

Reproduction in *Bull. Lloyd Libr.* (Cincinnati, Ohio) No. 1 (1900) of Pt. I and Pt. Second (1804), portrait frontispiece, and indices. Lost Cause Press produced a micro opaque copy (1955-1956).

Tucher Number 130.

Ewan Number 26.

Abhandlungen über die vermeinte Zauberkraft der Klapperschlange und andere amerikanischen Schlangen, aus dem Englischen ubersetzt, mit einer Einsitung und erlauternden Anmerkungen versehen von E. A. W. von Zimmermann, Hofrath und Professor in Braunschweig. Leipzig, 1798, bei Reinicke und Hinrichs.

xxiv, 27-102. 8°.

Review: in *Neue Allg. Deutsche Bibliot.* 46 (1799): 144-149.

Copies: L. W. Klauber Library, San Diego Soc. Nat. Hist., ex Basil Public Library, "Purchased from L'Art Ancien Zürich, 48 Swiss francs. Dec. 1, 1946"; LCP; UPenn Libr.

Professor Zimmermann's notes induced Barton to publish his *Supplement* in 1800.

Ewan Number 27.

"Ueber die Zauberkraft der Klapper-schlange, besonders in Rucksicht einer Schrift des Hrn. Dr. Barton." *Mag. Neuesten Zustand Naturk.* Pt. 2. (1798).

With Blumenbach's remarks.

Translated in *Philos. Mag.* 2 (1798): 251-256, "On the fascinating power of the Rattle-snake, with some remarks on Dr. Barton's memo on that subject."

Ewan Number 28.

"Hints relative to the stimulant effects of camphor on vegetation." Trommsdorf, *J. Pharm.* 5 (1798) 2: 262-266.

RSC, not seen by us.

Read before the APS 26 Sept. 1794, this was first published in Europe.

Ewan Number 29.

1799

Fragments of the Natural History of Pennsylvania. By Benjamin Smith Barton Part First. Philadelphia, Printed for the Author by Way and Groff. 1799. Sold in London by Messrs. G. J. and J. Robinson, Booksellers, Pater Noster Row. Price Four Shillings.

The second title page reads: *Fragments of Natural History of Pennsylvania.* By Benjamin Smith Barton, M.D. Correspondent of the Society of Antiquaries of Scotland; Member of the American Philosophical Society; Fellow of the American Academy Arts and Science of Boston; Corresponding Member of the Massachusetts Historical Society; Member of the Physical Society of Jena; One of the Foreign Members of the Linnaean Society, London; and Professor of Materia Medica, Natural History and Botany in the University of Pennsylvania. Part First. Neglecta,—Sparsa colligit, Utilia Seligit—Baglivi. Quae Praesenti Opusculo desunt suppleat Aetas. Quintilian. Philadelphia. Printed for the Author, by Way & Groff, No. 48, North Third-Street. 1799.

[i-v], vi-xviii, 24 fol.

Reviews: Edward Miller, *Med. Repos.* 3 (1799): 177-189, & 3 (1805): 177-189; *Monthly Mag. Amer. Rev.* 2 (1800): 36-47; Elliott Coues, *Birds of the Colorado Valley* (Washington, D.C., 1878), 592-593.

Copies: APS, "Presented 21 June 1799 By the Author," in John Vaughan's hand; ANSP, presented by Mrs. BSB, and a copy in package of George Ord's manuscripts; R. E. Griffith copy in J. L Childs Library, *Catalogue of the Distinguished Collection of the late John Childs...Library of Natural History* (New York, 1923); BPL, gift of Thomas Pennant Barton to Daniel Webster, 13 January 1842; LC, "presented to the National Institution by Thomas Pennant Barton, the author's son," with paper wrapper. Daniel Webster acknowledged receipt for the library "of the Dept. of State"; NLM; HEH, E. D. Church copy with bookplate, oatmeal paper wrappers, crisp, bright; Natl. Museum Washington; National Library, Canberra, Australia (G. M. Mathews collection); Royal Swedish Academy; Natural History Museum (London).

Pritzel, *Thesaurus*, 436; Sabin, *Dictionary*, 3809; Meisel, *Bibliography*, 3: 361; Sowerby, *Jefferson's Books*, 1028; Mengel, *Ellis* 1: no. 179.

Georgio Baglivi (1669-1707), Italian physician. Garrison, *Hist. Med.* 258-259; Morton, *Medical Bibliography* no. 68; Quintilian (ca. A.D. 35-95), Roman rhetorician.

"To the Linnean Society the following Fragments (which are intended to illustrate, in some degree, the Natural History of a country Extremely interesting to Philosophers, and hitherto very imperfectly Explored) are, with great respect, inscribed by the Society's friend and Brother Member." Philadelphia, April 18, 1799 [iii]. *Fragments* was issued 27 May 1799. M'Mahon listed it in his *Catalogue* (Figure 43).

Barton also wrote that he sent a copy to J. F. Blumenbach for the University of Göttingen.

There were two states of the *Fragments* with the second on thinner paper, although both had the watermarks "WL." Barton was still gathering facts. An example of the first state is a copy in the National Museum of Natural History with "Prof. S. F. Baird with regards of S. S. Haldemans 1848" on the title-page. On page 11 appears "Certhia familiaris. Certhia rufa of Bartram. *Travels.* Certhia fusca of Bartram MS. (Brown Creeper)." In the second state, recognizing the species as somewhat different from the European, Barton has "Certhia fusca of Bartram MS. Brown Creeper. I believe this species is not described. The general colour is a nut brown: speckled with

black or deep dusky: some white spots on the first coverts. Edwards (Natl. Hist. Vol. I. 26) has a bird a good deal like this. I mean his Little Brown and White Creeper." Then in his "Appendix," p. 18, "I now suspect this is no other than Certhia familiaris of Linnaeus, the European Creeper of Pennant, Arctic Zoology 1: 334." The AOU, 52, decided on *C. americana* Bonaparte!

The *Fragments*, as Miller wrote in *Medical Repository*, is "somewhat of a miscellaneous cast...full of instructive sentences, the result of much patient and diligent inquiry. [He] opposes the notion that birds 'never acquire any knowledge by experience.'" He listed Barton's promises of works planned, but delayed by "want of leisure," and suggests that all be gathered into "one great work on natural history." He concluded "We do not agree with him in calling the matter he has collected 'fragmentary rubbish.' Rubbish is old stuff of buildings undergoing decay. Dr. Barton's are new materials for a grand edifice."

Medical Repository 3 (1799): 215, announced "We are authorized to mention, that the second part of Dr. Barton's 'Fragments of the Natural History of Pennsylvania' will contain a pretty full account of the quadrupeds of that State; and that he expects to publish it next spring." The second part did not appear as planned. Instead a number of short articles on animals were published in journals. In 1806 Barton appealed for support in his *Proposals for Elements of Zoology*, but there was not sufficient response, so he continued with individual papers.

Tucher Number 143, 144.
Ewan Number 30.

Papers relative to Certain American Antiquities by Winthrop Sargent, Secretary to the Territory of the United States, North-west of the River Ohio; and by Benjamin Smith Barton, M.D., Philadelphia. Thomas Dobson. 1799.

iv, 39. 2 plates. 4°.

Sabin, *Dictionary*, 3821, 77038.

Ewan Number 31.

"Memoir concerning the fascinating faculty which has been ascribed to the rattle-snake, and other American serpents." *Trans. Amer. Philos. Soc.* 4: (1799): 74–113.

Read before the Society 4 April 1794. "Since this memoir was read before the Society, it has been considerably altered and somewhat enlarged," fn.

He acknowledged information from William Bartram and from Heckewelder. Impatient with delay in publication of the *Transactions*, and hoping for a wider American audience, Barton had published the article in 1796.

"Perhaps no man experiences the force and miseries of this prejudice [of snakes] 'whose creeping motion is their only poison' in a degree greater than I do. It is the only prejudice which, I think, I have not strength to subdue" (101).

Ewan Number 32.

"Some account of an American species of Dipus or Jerboa," *Trans. Amer. Philos. Soc.* 4 (1799): 114–123.

Illus., Barton's drawing engraved by John Vallance.

Read before the Society 2 October 1795.

Review: S. L. Mitchill in *Med. Repos.* 4 (1801): "a brief and impressive description of one of the native quadrupeds of North America."

Copy: RSC.

Cited in J. L. R. Agassiz and E. E. Strickland, *Bibliographia Zoologiae et Geologiae* (London, 1848–1854).

Ewan Number 33.

["A drawing of some utensils, or ornaments, taken from an old Indian Grave, of Cincinnati...by Colonel Winthrop Sargent, communicated by [BSB]," *Trans. Amer. Philos. Soc.* 4 (1799): 179–180, the two plates by Barton, "Considered as pledges, but by no means specimens of what I intend." This followed the article, "A Letter from Colonel Winthrop Sargent to Dr. [BSB], accompanying Drawings, and some Account of certain articles which were taken out of an ancient tumulus or grave in the Western country," *Trans. Amer. Philos. Soc.* 4 (1799): 177–178.]
Ewan Number 34.

"Observations and conjectures concerning certain articles which were taken out of an ancient tumulus, or grave, at Cincinnati in the County of Hamilton, and Territory of the United States north-west of the River Ohio; in a letter from Benjamin Smith Barton to the Reverend Joseph Priestley..." *Trans. Amer. Philos. Soc.* 4 (1799): 181–215.

Read before the APS 20 May 1796.
Ewan Number 35.

"Hints relative to the stimulant effects of camphor on vegetation," *Trans. Amer. Philos. Soc.* 4 (1799): 232–235.

RSC.

Read before the Society 26 Sept. 1794.

Liriodendron twig of leaves and flower "seem" to have lasted longer than in plain water.
Ewan Number 36.

"Supplement to memoir on sand-hills of Cape Henry," *Trans. Amer. Philos. Soc.* 4 (1799): 444.

Not seen. APS Cumulative Index.

Latrobe had read his paper before the Society 21 December 1798, and the committee had approved publication 1 February 1799.
Ewan Number 37.

"Notes, No. 1. On the Falls of Niagara," *Proc. Amer. Philos. Soc.* 22 (1799), Appendix: 284.

Read in January (Meisel, *Bibliography*, 2: 15).

Barton's trip in the summer of 1797.
Ewan Number 38.

1800

A Memoir concerning the Disease of Goitre, as it prevails in different Parts of North America. By Benjamin Smith Barton, M.D., Professor of Materia Medica, Natural History and Botany, in the University of Pennsylvania, and one of the Physicians to the Pennsylvania Hospital: "I know but one class of people who never err; those who do nothing, observe nothing, and make no experiments. Fontana." Philadelphia: Printed for the Author, by Way & Groff, no. 48, North Third Street. 1800.

viii. 94. 8°.

Reviews: *Med. Repos.* 4 (1801): 47–53, 155–165 (by S. L. Mitchill?); Barton gives as the "exciting cause of goitre...a Miasma of the same species as that which produces intermittent and remittent fevers, dysenteries and similar complaints" (p. 50). He hopes Barton will continue "with the same caution, wariness and candour, as well with the same comprehension and enlightened views, which so eminently distinguish his present memoir" (p. 163). Caldwell in reviewing the work in *Medical Repository* 5 (1802): 327–328 disagreed on miasma as a cause, and goiter's relation to intermittent fevers. The editor reminded the reader that Barton cautiously foresaw many such objections, but

presented his observations "with all the wariness, caution and candour, which become philosophical investigation."

Copies: APS, presented by Barton 20 June 1800; ANSP, donated by Mrs. Barton; BPL, T. P. Barton's copy; New York Acad. Med.; LC, stamped "National Institute, Respectfully presented to the National Institute for the promotion of science by Thomas Pennant Barton," rebound; PhP, on verso of title page. "For the library of the Pennsylvania Hospital"; listed in *Catalog Library of the American Antiquarian Society...* (Worcester, Mass., 1837), 11; Med. Soc. London.

Sabin, *Dictionary*, 3813.

Dedicated to John Frederick Blumenbach, Univ. Göttingen, 8 Dec. 1799. Barton suggested that a comparison of soils, climate, and exposure of European countries and America where the malady occurs would be "an incurious point to examine, with attention...If the facts contained in my memoir should serve to throw any light upon the nature of this complaint I shall think the time which I have employed in the investigation has not been altogether misapplied." The work had been announced in *Med. Repos.* 1 (1798): 385.

Ewan Number 39.

Supplement to a Memoir concerning the Fascinating Faculty which has been attributed to the Rattle-Snake, and other American Serpents. In a letter to Professor Zimmermann, of Brunswick, in Germany. [Philadelphia, 1800].

40. 8°.

Copies: APS; ANSP, Donated by Mrs. BSB (*J. Acad. Nat. Sci. Philadelphia* 1 (1817): 203); HEH, with "Benjamin Smith Barton, M.D." in his hand on title page; San Diego Nat. Hist. Mus., L. M. Klauber's copy, stitched, no record of purchase.

Sabin, *Dictionary*, 3827.

On 28 October 1810 Barton sent a copy of the *Supplement* and a copy of *Account of Siren Lacertina* to Manuel Andres Del Rio in Mexico. (Barton papers, APS).

Tucher Number 152.
Ewan Number 40.

1801

Collections for an Essay towards a Materia Medica of the United States. Part First. Second Edition. Philadelphia, for the Author, by Way and Groff, 1801.

xii, 64 p. 4°.

Review: [S. L. Mitchill?], *Med. Repos. 5* (1802): 436–444: "This second edition is improved by the addition of a number of notes at the bottom of the page. The appendix is considerably enlarged...It gives us great pleasure to find the learned author intends to publish an additional volume...and has made great progress." MacPhail, *Barton*, 3; T. W. Jeffries, "Barton's unpublished Materia Medica," *Pharmic. Hist.* 17 (1975) no. 2: 69–71.

Copies: APS; PhP, on flyleaf, "Presented to the hospital by the author"; LCP; HSP.

Preface dated 2 Dec. 1801: "My collections...have been favourably received by the public. I ought, perhaps to mention this circumstance with some degree of surprise, for when I published the work, I was not ignorant how extremely superficial and imperfect it was. It has always appeared to me, that an author has but little claim upon the attention and the favours of the public, unless he renders the second more perfect than the former editions of his works...I have entitled this little volume 'Part First' because it is my intention to publish at least one part more...But the very imperfect state of my health renders it uncertain, when the Second Part will appear."

"I certainly do not repose implicit confidence in the half of what is said concerning the powers of medicine...How are we to know what plants are proper for the purpose of medicine until we have examined a great body of vegetables?" pp. xi-xii.

M'Mahon advertised *Collections* in his catalogue (Figure 43).

Tucher Number 131, giving Robert Carr as printer.

Ewan Number 41.

Memoria sobre a Bronchocele ou Papo da America Septentrional, por Benjamin Smith Barton, traducida em portuguez por Hipolito José da Costa Pereira. Furtado de Mendonca. Casa Litterarria do Arco de Cego. Lisbon, 1801.

6 p. l, vii-xvii, 86 p. 8°.

Copies: New York Acad. Med.; Portuguese Natl. Library. We gratefully acknowledge the assistance of H. Amorin Ferreira, who located the copy and wrote from Lisbon 25 August 1971. The *Memoria* is mentioned in Matias Ferreira de Mira, *Historia da Medicina Portuguesa* (Lisbon, 1947), 302.

Sabin, *Dictionary,* 3815.

Ewan Number 42.

"On the utility of birds in destroying insects and other productions harmful to mankind." *Philos. Mag.* 9 (1801): 52-62.

An early environmentalist, Barton would protect birds.

Ewan Number 43.

"The following interesting relations of facts and observations, was communicated to me, from Dr. Barton" in Thomas Semmes, *Essay on the Effects of Lead...* Philadelphia, Printed by Carr and Smith, 1801, pp. 57-60.

Copies: APS, presented by Dr. A[nthony] Fothergill, 17 Feb. 1804; PhP.

Austin, *Imprints,* no. 1730.

Barton dated his letter to Semmes 4 June 1801.

Ewan Number 44.

1802

Abhandlung über den Kropf so wie er sich in vershiedenen Theilen von Nordamerica Haufig findet... Aus dem Englischen übersetzt und mit anmerkungen Versehen von Wilhelm Liebsch. Göttingen, Dieterich, 1802.

136. 8°.

Copy: APS.

Sabin, *Dictionary,* 3814.

Barton's announcement in *PMPJ* 2 (1805) Pt. 1: 193: "Dr. William Liebsch has published, at Göttingen, a German translation...This translator has enriched his edition with many valuable notes." And "A translation of the same work, into the Spanish language, has appeared in Guatemala."

Ewan Number 45.

Memoir on Goitre has been translated into Spanish and printed in Guatemala. So wrote Alejandro Ramirez to Barton from New Guatemala 3 March 1803.

No copy seen.

Ewan Number 46.

"Some account of the poisonous and injurious honey of North America." *Trans. Amer. Philos. Soc.* 5 (1802): 51-70.

Review: *Med. Repos. 5* (1802): 47–50; and in *J. New York Entomol. Soc.* 61 (1953): 138, where the reviewer thinks honey from *Kalmia angustifolia* had been allowed to ferment and so produced intoxication.

Read at APS meeting 18 July 1794.

"Bristles with references and footnotes" (Weiss, *Entomology*, 43).

William Bartram is credited with information on p. 163, where he tells that in the Carolinas and Florida hunters taste a small quantity to be sure of the safety, especially of the laurel *Kalmia*. Poisonous honey "produced vertigo, dimness of vision at first, then a delirium sometimes mild and pleasant and sometimes ferocious, followed by stomach & intestinal pains, profuse perspiration, foaming at the mouth, purging, and in some cases death."

The paper was cited in Watt, *Bibliotheca Brit.*, 80 n.

BSB, ill at Princeton, New Jersey, 21 Nov. 1815, dictated to his young son: "In the re-publication of my paper on poisonous honey, the Editor must not forget, that I have committed a great mistake, in quoting the Memorabilia, instead of the Anabasis of Xenophon...It may be well to add to this paper Sir Joseph Banks' letter to me on the subject of honey."

Ewan Number 47.

"Some account of the poisonous and injurious honey of North America." *Philos. Mag.* 12 (1802): 121–135.

RSC.

Not seen.

Ewan Number 48.

1803

Elements of Botany: or Outlines of the Natural History of Vegetables. Illustrated by Thirty Plates. By Benjamin Smith Barton, M.D., Professor of Materia Medica, Natural History and Botany in the University of Pennsylvania. Printed for the Author [by William F. M'Laughlin], Philadelphia. 1803.

Part I: xii, 302, 32. 1 pl. as frontispiece.

Part II: 168, appendix 38, 1 p. directions to the binder, pls. 2–30.

Reviews: S. L. Mitchill, *Med. Repos.* 7 (1803): 48–64, 156–166. Edgar Fahs Smith, *Pennsylvania Mag. Hist. Biogr.* 51 (1927): 17, "it was admirable in all its parts. One, not a botanist, will read it with ever increasing interest."

Copies: APS, presented by the author, April 1803; ANSP; HSP, Emily Cheston's copy, "John M. Jackson" on title page (John Jackson, 1748–1821, born Lemon Grove, Pennsylvania, horticulturist according to Barnhart, *Notes*); Denver Bot. Gard., Waring copy, inscribed "Isaac Cleaver 1807" (Cleaver, 1795–1822, Univ. Penn. M.D. 1805, correspondent of Muhlenberg according to Barnhart, *Notes*); HTML, inscribed "Marianne Holden a present from her uncle W. Bassett," (Wm. F. Bassett, 1825–1914, b. Ashfield, MA, d. Hammenton, New Jersey, evidently a florist according to Barnhart, *Notes*), no pl. no. 9, but an unnumbered plate from *Gentleman's Mag.* (1762); UK, T. J. Fitzpatrick collection, bookplate of Henry Lee Scott; LSU, McIlhenny Collection inscribed on dedication page "Julia A. Hudson" and dated 28 Feb. 1803; NYBG, Hosack's copy, no indication of presentation; UC Biol. Libr.; Stockholm, Kongl. Vetensk. Bibliot., in original boards with paper labels; PhP, plates 14, 18 wanting; MBG, S. Jackson, M.D., signature on title page.

Sabin, *Dictionary*, 3806; *TL-2*; Rehder, Bradley Bibliogr., 1: 83; Pritzel, *Thesaurus*, 437; Meisel, *Bibliography*, 3: 363–364. MacPhail, *Barton*, no. 4.

Preface dated 28 Feb. 1803. Dedicated "to the students of Medicine, and to the Lovers and Cultivators of Natural History in every part of the United States." "The

greater number of plates...have been engraved from the original drawings of William Bartram" (viii).

See our Chapter XIII, America's First Textbook of Botany.

Tucher Number 135-136.

Ewan Number 49.

Gleanings from the Most Celebrated Books on Husbandry, Gardening and Rural Affairs. [quotations from Lord Bacon and Stillingfleet]. From the London Second Edition of 1803. Interspersed with Remarks and Observations by a Gentleman of Philadelphia. Printed and sold by James Humphreys...1803.

viii, 365, 1 folding pl. of 15 figs., 2 pp. of advertising of publications by Humphreys.

Copies: APS, and at least two dozen in American libraries; Ewan Libr.; Lloyd Library, in unidentified hand: "edited by B. S. Barton. rare. frontis. engr. by Tanner." On title page is penciled "B. S. Barton?" (The frontispiece, usually wanting, was engraved for M. Carey, Tanner sculpt. The plate illustrated garden tools, implements, and plows.)

"Remarks and observations by a gentleman of Philadelphia" are interspersed throughout. Remedies shown reliable "by recent experience" hint at BSB's medical role. Reference is made to the APS of which he was vice-president, and there are definitions added for terms not in familiar use in the U.S. The additions are within reversed quotation marks ("/"), usually of a sentence or two, and quite in BSB's style. Of the Tulip Tree, *Liriodendron tulipifera*, he added: "Its blossoms abound in honey, and in the season *bees* etc. among the branches seem to give vociferous life to the tree, with their buzz" (p. 324). Reminiscent of his article "On the utility of birds in destroying insects" (1801), he added: "*Crows* are terrible destroyers of Indian Corn. Blackbirds and *Squirrels* are also...but the poor *Woodpeckers*, accused of eating maize...do but dig out Worms, for which they deserve a premium" (p. 332). He ends the book with a report "From the late English Publication" on preserving rye from rats and insects. BSB was one of the original members of the Philadelphia Society for Promoting Agriculture, founded in 1785. This work preceded the publication under Richard Peters of the Society's *Memoirs* Volume I (1808), and so was an important contribution for American farmers. It was advertised in M'Mahon's undated catalogue.

The title of the London work was *Gleanings from Books on Agriculture and Gardening*, ed. 2 (London, 1802). On verso of title page "W. F. 1802." viii, 432, frontispiece 8°. (British Museum, Bloomsbury, copy, from J. C. Loudon's library?, from R. Weston?). For the American edition see Anonymous, *From Seed to Flower*, 53, reproduction of frontispiece, 52. Dr. James Mease was surely the "American Farmer" of *An Epitome of Mr. Forsyth's Treatise* (Philadelphia, 1803), considered on p. 51 of the Philadelphia *Gleanings*. William Forsyth's *A Treatise on the Culture and Management of Fruit-Trees...* (London, 1802) had been acknowledged as donated to the APS 18 June 1802.

Ewan Number 50.

Hints on the Etymology of certain English Words & their Affinity to Words in the Languages of Different European, Asiatic & American [Indian] *Nations* in a Letter from Dr. Barton to Thomas Beddoes. Philadelphia, 1803.

14 p. 4°

Read before the APS 21 Oct. 1803; referred to committee 4 Nov., 1803; and reported for publication 2 March 1804.

Copies: APS; Amer. Antiq. Soc.

Sabin, *Dictionary*, 3810.

Ewan Number 51.

"Some account of the Poisonous and Injurious Honey of North America." *J. Nat. Philos.* 5 (1803): 159–175.

RSC.

A reprint of his article of 1802 in the *Trans. Amer. Philos. Soc.*

Ewan Number 52.

"Letter to Dr. Ramsay in consequence of his Observations on the bite of a Snake cured by Volatile Alkali." *Philos. Mag.* 15 (1803): 128–131.

RSC.

Not seen.

Ewan Number 53.

"On Indian dogs." *Philos. Mag.* 15 (1803): 1–9, 135–142.

RSC.

An example of Barton's sending articles to England for publication. In Philadelphia it appeared after his establishment of *PMPJ*.

Ewan Number 54.

"Letter from Dr. Barton to Professor Zimmermann on the fascinating Faculty which has been attributed to the Rattle-Snake, and other American serpents." *Philos. Mag.* 15 (1803): 193–202, 294–300.

RSC.

Ewan Number 55.

1804

Collections for an Essay towards a Materia Medica of the United States. By Benjamin Smith Barton, M.D., Professor of Natural History in the University of Pennsylvania. Part Second. – hanc etiam, Maecenas, aspice partem. Philadelphia: Printed, for the Author, by A. and G. Way. 1804.

xvi, 53 pp., 3 pp. advertising. An index of 3 pp.

Review: *Med. Repos.* 2nd Hex. 8 (1805) 2: 197–203.

Copies: APS; ANSP, donated by Mrs. BSB; PhP, presented by BSB, but inscription not in his hand; CPSP, in Wm. N. Lacey's collection of medical pamphlets, with B. Rush's *Animal Life*; Hunt Institute for Botanical Documentation, "1798–1804. 2 vols."; LCP; Stockholm, Kongl. Vetensk. Bibliot.; Med. Soc. London; Natl. Union Cat. lists 10 entries.

TL-2; Pritzel, *Thesaurus*, 435.

BSB to Wm. W[oodward], bookseller in Philadelphia, 15 Nov. 1806: He is sending four copies of his *Collections* to be sold on commission (A.L.S. 1 s. Countway Lib. Med.).

Dedicated to John Coakley Lettsom, M.D.; dated Feb. 10, 1804.

Collections (1801–1804) comprised Pt. 1, ed. 2, and Pt. 2, ed. 1 (above). See *Collections* published in 1900 for indices.

Tucher Number 132.

Ewan Number 56.

Elements of Botany: or Outlines of the Natural History of Vegetables. Illustrated by Thirty plates, By Benjamin Smith Barton, M.D., Professor of Materia Medica, Natural History and Botany in the University of Pennsylvania, revised and corrected, with the addition of British examples and occasional notes, by the English editor. London, Printed for J. Johnson, St. Paul's Churchyard, by I. Gold, Shoe Lane. 1804.

xii, 344, 35 p. 30 plates. 41 p. 8°.

Copies: APS; ANSP, presentation copy from Mrs. Barton; MBG; NYBG, frontispiece reduced and turned to face the title page, copy colored, no record of original owner; Univ. Texas, Wynd copy with stamp "George West."

Pritzel, *Thesaurus*, 437; Sabin, *Dictionary*, 3806; McPhail, *Barton*, no. 6.

Additions indicated by the English editor, *e.g.*, pp. 4, 40–41, 87, 164, 195, 333, with frequent references to J. E. Smith, *English Botany* (London, 1790–1814, 36 vols.). "The general style of the work was, moreover, diffuse, and the matter redundant...the frequent, tiresome, and disgusting repetitions of the terms, which bring the peculiarities of the sexual system directly into view, have as far as possible been discarded...The third part is considerably abridged...British examples have also been added..." (p. xii).

"The greater number of the plates...have been engraved from the original drawings of Mr. William Bartram" (Preface, viii).

Tucher Number 137.
Ewan Number 57.

Elements (1804?), St. Petersburg.

"The Empress Dowager of Russia has, for her own gratification and improvement in a science which she has always patronized, caused the whole work to be translated into French. This it is presumed, is the first American work which has received this flattering distinction": "Miscellany" for the *Repertory* (1804) at APS.

In *Elements of Botany* (1836), 30, W. P. C. Barton mentions a Russian edition, referring surely to this French translation. Youmans in *Popular Sci. Monthly* (1896), 838, and others quote W. P. C. Barton.

Ewan Number 58.

[in] John Pinkerton, *Modern Geography. A Description of the Empires, Kingdoms, States, and Colonies; with the Oceans, Seas, and Isles; in all parts of the World: Including the most recent Discoveries, and Political Alterations, Digested on a New Plan.* By John Pinkerton. The Astronomical Introduction by the Rev. S. Vince, A.M. F.R.S. and Plumian Professor of Astronomy, and Experimental Philosophy in the University of Cambridge. The Article America corrected and considerably enlarged, By Dr. Barton, of Philadelphia. With numerous Maps, Drawn under the Direction and with the latest improvements, of Arrowsmith, and engraved by the First American Artists. To the Whole are added, a Catalogue of the best Maps, and Books of Travels and Voyages, in all Languages; and an ample Index. Published by John Conrad & Co. Philadelphia; W. Maxwell, Printers, 1804. 3 vols.

Vol. 2: America, North and South, and West Indies, [394]–554. "Notes concerning America" on pp. [611]–612. The "numerous maps" are not included.

Copies: ANSP; Univ. Toronto; UC Berkeley; HEH, Abel Stearns copy; MHS.

Sabin, *Dictionary*, 62959.

Reviewed by Barton himself, his article titled "America," in *PMPJ* 1 (1805) Pt. 2: 188–192, the article signed "April 7, 1804," and it was reviewed in *Monthly Anthology and Boston Review.*

Ewan Number 59.

"Memorandum concerning a new vegetable muscipula." *Trans. Amer. Philos. Soc.* 6 (1804, Pt. 1): 79–81.

Barton's paper had been referred to Mr. Latrobe 18 Feb. 1803, and reported "worthy of publication" on 4 March.

Ewan Number 60.

"Supplement to the account of the *Dipus Americanus* in IV vol...." *Trans. Amer. Philos. Soc.* 6 (1804, Pt. 1): 143–144.

"A Jerboa taken up in the *Torpid State* by Mr. Bartram near this city," was exhibited at an APS meeting 18 Feb. 1803. The paper was referred to Mr. Peale 16 Dec. 1803, and ordered for publication 20 Jan. 1804.
Ewan Number 61.

"Hints on the etymology of certain English words." *Trans. Amer. Philos. Soc.* 6 (1804, Pt. 1): 145–149.

Read before the APS 2 Oct. 1803; referred to committee 4 Nov. 1803, and reported for publication 2 March 1804.
Ewan Number 62.

Hints on the Etymology of certain English Words & their Affinity to Words in the Languages of different European, Asiatic & American (Indian) Nations in a letter from Dr. Barton to Thomas Beddoes. Philadelphia. 1804.

14. 4°.

Sabin, *Dictionary*, 3810.

Barton had this privately published, fearing a continued delay of the *Transactions* due to a paper shortage.
Ewan Number 63.

"A Memoir concerning the Fascinating Faculty which has been ascribed to the Rattle-Snake, and other American Serpents. From the American Philosophical Society Transactions Vol. IV." *J. Nat. Philos.* 7 (1804): 270–285; 8 (1804): 58–62, 100–114; 13 (1806): 300–305.

W. Nicholson's editorial comment: "This interesting paper has been deferred from the pressure of more immediate and temporary claim."

Copy: RSC.
Ewan Number 64.

The Philadelphia Medical and Physical Journal. Collected and arranged by Benjamin Smith Barton, M.D., Professor of Materia Medica, Natural History, and Botany, in the University of Pennsylvania. Part I. Vol. I. Published by J. Conrad & Co., Chestnut St. Philadelphia; M & J. Conrad Co., Baltimore; Rapin, Conrad & Co., Norfolk. Printed by T. & C. Palmer, 116 High St. 1804[–1809]. Subscriptions and manuscripts for publication may be sent to any of the Conrad companies.

Copies: APS; HEH, "W. Johnson, Philadelphia, 4 March 1805"; HTML, John Ordway, with supplements bound in after vol. III.

On the verso of the title page appeared a copyright, "J. Conrad deposited with D. Caldwell, Chief of District Court of Pennsylvania, according to an Act of Congress for the encouragement of Learning, the title of a book whereof he claims as proprietor this Journal." Conrad thereby assumed the financial burden!

Vol. I (1804) Pt. 1: x, 185. Ded. to Joseph Banks, 13 Nov. 1804 (i–iv).

I (1805) Pt. 2: vii, 192, viii. Ded. to David Pennant, 17 Feb. 1805.

II (1805) Pt. 1: viii, 208, ix–xii. Ded. to Students of Medicine at University of Pennsylvania. 2 Dec. 1805.

II (1806) Pt. 2: viii, 209, Index [1–10]. Ded. to William Maclure.

III (1808) Pt. 1: viii, 190.

Supplements:

1 (March 1806): [3], 98, 1. [Note: Supplement 1 in HTML copy follows p. 190 of Vol. 3 (1808).]

2 (July 1807): 103–121. Ded. to Matthias Barton, March 1806: "This portion...inscribed to Matthias Barton...by his Affectionate Brother and Friend, &c." This dedication, however, is bound with Vol. III (May 1809): iv, 207-312, in HTML copy.

Each part was divided into sections: Vol. I, 4 sections; Vol. II, 3 sections, Vol. III, only 1 part, 1 section, but the parts were continuously paged.

"Memorandum concerning the Earthquakes of North America," *PMPJ* 1 (1804) Pt. 1: 60-65.

Barton's response after reading Volney's *Tableau,* to which he adds a "Supplement," facts from John Bartram, pp. 65-67.
Ewan Number 65.

"Notes" on Dr. Barnwell's *Observations. PMPJ* 1 (1804) Pt. 1: 72-75.

Barnwell, having been "highly gratified" in attending a lecture by Barton, wrote on the "power of habit in vegetables," pp. 67-72, abstracting from his *Physical Investigations and Deductions, from medical and surgical facts...of diseases in warm and vitiated atmosphere...* (Philadelphia, 1802), the material having been discussed at a meeting of the APS 18 December 1795. Barton refers the reader to his *Elements of Botany* for changes induced in vegetables by climate.
Ewan Number 66.

"Notice of the Travels of a Mohawk-Indian." *PMPJ* 1 (1804) Pt. 1: 75-77.

Daniel Green, Mohawk, spent two years many miles beyond Detroit. "He was not entirely an incurious traveller."
Ewan Number 67.

"Some Account of the Disease called Hollow-Horn." *PMPJ* 1 (1804) Pt. 1: 77-79.

"From the Editor's MS Journal, for the year 1802."
Ewan Number 68.

[Note to] "On the Salivation Effects of Digitalis Purpurea" *PMPJ* 1 (1804) Pt. 1: 81-82.

"...ages must elapse before a satisfactory arrangement of the articles of the Materia Medica can be accomplished."
Ewan Number 69.

"Supplement" to Topographical and Medical Sketch of Bristol in Pennsylvania, *PMPJ* 1 (1804) Pt. 1: 22-24.

Dr. Amos Gregg's "sketch" is on pp. 15-22. Barton's first contribution to his newly founded *Journal,* the notes from his "Ms. Medical Journal for the year 1789."
Ewan Number 70.

"Remarks" on Col. George Gibson's Observations on the internal use of *Rhus radicans. PMPJ* 1 (1804) Pt. 1: 35.

Used in Pennsylvania Hospital for pulmonary complaint.
Ewan Number 71.

"Memorandum concerning the Use of Indigo in the disease of Cynanche Trachealis." *PMPJ* 1 (1804) Pt. 1: 35-36.

Indigo is put into a rag, stirred until the water blue, then given by teaspoonfuls to a child. Barton records the information "as he will often be found to record real or supposed medical facts, with hesitation, and with doubts."
Ewan Number 72.

"Description of the Falls of Niagara. Extracted from the Journal of a Gentleman, who visited them, a few years since." *PMPJ* 1 (1804) Pt. 1: 39–46.

The "Gentleman," Barton, had visited the Falls in 1797. Alexander Wilson criticized Barton's denial of the wearing-away of the rocks by water.
Ewan Number 73.

"Remarks on the Locust of North America." *PMPJ* 1 (1804) Pt. 1: *55–56.*

This followed a paper by Charles Reichel, pp. *52–55*, and preceded "Additional observations" from a manuscript of John Bartram, pp. *56–59*, to which Barton added a "Note" on p. *59.*
Ewan Number 74.

"Hints relative to the external Employment of the Leaves of the Liriodendron Tulipifera or Tulip-tree, in cases of Gout and Rheumatism." *PMPJ* 1 (1804) Pt. 1: 83–85.

Barton tried the leaves "I think, with very decided advantages...These things are recorded with hesitation, and with doubts...Medicine is not yet a science...no one will pretend that we already are acquainted with all the laws of nature." Dried leaves soaked in milk and water relieved recent burns. William Dunbar told him the wood swells with alteration of humidity, and so makes an excellent hygrometer.
Ewan Number 75.

"Facts relative to the food of the hummingbird." *PMPJ* 1 (1804) Pt. 1: 88–89.

RSC.
Ewan Number 76.

"Notes" on Mr. Boyd's paper. *PMPJ* 1 (1804) Pt. 1: 99–102.

Boyd's paper concerned the Ohio region around Clarksville, on the northwest side of the Ohio River, mounds, and Indians, pp. 95–99.
Ewan Number 77.

"Miscellaneous facts and observations" [on *Datura*, *Equisetum*, oysters, snakes, experiments, etc.] *PMPJ* 1 (1804) Pt. 1: 145–173.

From Barton's "Ms. Medical Journal for 1788, 1793, 1794," and communications from correspondents including, for examples, Professor Autenreith, Tübingen, Wertenberg, 7 Oct. 1797, and quotations from Ligon, Gage, Bartram, Heckewelder, and James W. Stevens.
Ewan Number 78.

"Typhus carcerum, or Goal Fever," *PMPJ* 1 (1804) Pt. 1: 131–134.

From his Medical Journal.
Ewan Number 79.

"Plaster of Paris," *PMPJ* 1 (1804): 159–161.

Used as a manure, the information from Richard Peters Barton.
Ewan Number 80.

[Note on manuscript Journal of James W. Stevens on a curious stone] *PMPJ* 1 (1804) Pt. 1: 161–163.

"Unquestionably a Madrepore impregnated with asphaltum," and Barton mentions an "oil-Spring," a branch of the "Allegeny" River.
Ewan Number 81.

"On preserving oysters upon heaps of coal as seen in the Firth of Forth," *PMPJ* 1 (1804) Pt. 1: 165.

From "Editor's MS Journal, Edinburgh, May 8, 1788."

Ewan Number 82.

"Experiment upon Lepus [*Oryctolagus*] Cuniculus." *PMPJ* 1 (1804) Pt. 1: 167–169.

From Barton's manuscript. "Anatomy and physiology of the Rattle-Snake and other North American Serpents." The experiment was observed by Drs. Woodhouse, Jacobs, Seybert, and pupils Jarvis Roebuck and James Bartram.

Ewan Number 83.

[On] "Aesculus Pavia." *PMPJ* 1 (1804) Pt. 1: 173.

Wm. Dunbar suggests its use for cleaning wools, and Barton finds it unsuccessful on cottons.

Ewan Number 84.

"Some account of a new species of North American Lizard." *Trans. Amer. Philos. Soc.* 6 (1804, Pt. 1): 108–113. illus. fig. 6.

Barton read this paper on a salamander 15 April 1803 before the Society, with a live animal and a drawing, the paper referred to committee. Edward Stevens wrote John Vaughan 29 August that the "dissertation" merited publication. Barton named the salamander *Lacerta subviolacea.* It is *Ambystoma maculatum* Shaw. "Lizard" was the usage of the time. Manuscript in APS Archives.

Ewan Number 85.

1805

[*Prodromus Florae Pennsylvanicae*... Philadelphia, Thomas and George Palmer, 1805-]

Copy: Barton papers, APS.

Originally begun as *Prodromus Florula Pennsylvanica* while a student at the University of Edinburgh, and referred to frequently through the years as planned or in progress. It was announced in *PMPJ* Suppl. 1 (1806): [77]–92, as "Prodromus for a Flora of the States of New York, New Jersey, Pennsylvania, Delaware, Maryland, Virginia." He hoped to publish in 1806 Vol. 1 of ten to twelve classes of the sexual system. The work was to contain a larger number of plants than Michaux's *Flora.*

McPhail, *Barton,* 37–38, with bibliographic detail.

In Barton's letter to Thunberg, 4 Nov. 1790, read his plans for his Flora.

Ewan Number 86.

"Letter from Benjamin Smith Barton...to Dr. Pearson, containing experiments with metallic solutions to determine their effects on Plants," *J. Nat. Philos.* 10 (1805): 241–242.

Letter dated 28 Oct. 1802.

Ewan Number 87.

"Letter to M. Lacépède, of Paris, On the natural history of North America..." *Philos. Mag.* 22 (1805): 97–103, 204–211.

Read before the APS 5 Nov. 1802. The printed paper bears Barton's signature date 31 Oct. 1802, and was at Lacépède's "free disposal."

RSC.

Ewan Number 88.

"Some account of the different species and varieties of native American, or Indian dogs, by the Editor." *PMPJ* 1 (1805) Pt. 2: 3–31.

RSC.
Ewan Number 89.

"On a species of North American Wandering Mouse," *PMPJ* 1 (1805) Pt. 2: 31–32.
"A further account of the American animal will be very acceptable to the Editor."
Ewan Number 90.

"Remarks on West Indian fish." *PMPJ* 1 (1805) Pt. 2: 45–48.
Barton added notes to the preceding paper, which was by Frederick Detlief Meyer.
Ewan Number 91.

[Remarks on] "Hypericum Perfoliatum." *PMPJ* 1 (1805) Pt. 2: 59–60.
William Bartram had discussed the plant, pp. 54–59.
Barton wrote: "A history of the superstitious opinions and practices of mankind, concerning different species of plants, is a desideratum in science and literature," referring to its "anti-daemanic virtue" in Germany and other countries of Europe.
Ewan Number 92.

[Remarks on] "Observations and Conjectures relative to the supposed Welch-Indians, in the western part of North America." *PMPJ* 1 (1805) Pt. 2: 89–96.
Barton follows the article by Harry Toulain, pp. 79–88, whose article had originally been sent to the *Kentucky Palladium*. Barton does not hesitate to conjecture "that no traces of the descendants of the Welsh prince will ever be discovered in the western part of North America."
RSC.
Ewan Number 93.

[Note on] "Description of an American species of Certhia, or Creeper." *PMPJ* 1 (1805) Pt. 2: 103, plate on p. 105.
The bird referred to in his *Fragments*. The plate was of a drawing by Anne Bartram.
Ewan Number 94.

"Facts relative to the torpid state of the North American alligator," *PMPJ* 1 (1805) Pt. 2: 106–109.
"Communicated to me about the year 1785, by a Mr. Graham,...intelligent student of medicine at Univ. of Pennsylvania," that alligators swallow pine knots.
RSC.
Ewan Number 95.

"Observations on Insects." *PMPJ* 1 (1805) Pt. 2: 127–131.
Walmsley's "Observations relative to the Wheat-moth" preceded on pp. 119–126. Barton expects to give a "more circumstantial account." He lists sixteen offenders and solicits information concerning "experiments of preventing, or of curing the evils inflicted by these insects." His memoir, he wrote, will be published by the APS or in detached form. The memoir was never completed.
Paper dated 22 Feb. 1805.
Ewan Number 96.

[Comment and agreement with William Bartram's criticism of Dr. Amos Gregg's description of the physical geography of Bristol, Pennsylvania]. *PMPJ* 1 (1805) Pt. 2: 133.
Bartram's paper appeared above on pp. 131–133.
Ewan Number 97.

Review of Waterhouse's Lecture on the Evil Tendency of the use of Tobacco on Young Persons. *PMPJ* 1 (1805) Pt. 2: [174]-175.

Barton then quotes the lecture, pp. 175-187.

Ewan Number 98.

Remarks on "Jagisho," *PMPJ* 1 (1805) Pt. 2: 164-165.

An Indian legend of a "naked animal" also referred to by Barton as a giant sloth, the "Tadigrada." (cf. p. 769.)

Ewan Number 99.

"Notice of the Sulphur Springs in the country of Ontario and the State of New York. In a letter to the President of the United States. From the Editor. Dec. 30, 1803." *PMPJ* 1 (1805) Pt. 2: 166-168.

Jefferson the president. Barton had visited the springs in August 1797. The sample examined by Priestley was found to be 96% good and unmixed sulphur. The ground above in the region of its source sounded hollow when horses were ridden over the area. Barton was not sure of its potential importance.

RSC.

Ewan Number 100.

"[Review of] *Modern Geography...* by Pinkerton, Conrad & Co., Philadelphia, 1804." *PMPJ* 1 (1805) Pt. 2: 188-192.

"...work of classical merit, more convenient than the London ed." The part on the "New World, is somewhat enlarged, and is, in many respects, very materially altered. Whether...improved...it belongs not to the Editor of this Journal to assert." Barton had contributed the section on the New World.

Ewan Number 101.

"Notes by the Editor" [On the mammoth] *PMPJ* 2 (1805) Pt. 1: 60-62.

Barton comments on Bishop Madison's paper, pp. 58-60, by adding an account of "exuviae" found in the remains of a fossil "elephant" in northern Ireland.

Ewan Number 102.

"Note on the natural history of the substance called Guano." *PMPJ* 2 (1805) Pt. 1: 66-68.

RSC.

Acosta's report off the coast of Peru.

Ewan Number 103.

"Note" [after Dr. Laborde's paper on vaccination]. *PMPJ* 2 (1805) Pt. 2: 75-77.

Barton states he is going to collect into one work the sentiments on vaccination. The practice, he writes, is not so extensive as imagined, and there are some ill effects. He then adds several papers on vaccination from correspondents, pp. 78-83.

Ewan Number 104.

"Note by the Editor" to "On a case of Hemorrhage, successfully treated by the internal use of Acetate (or Sugar) of Lead," *PMPJ* 2 (1805) Pt. 1: 100.

The article from Dr. George Williamson of Baltimore, pp. 96-99.

Ewan Number 105.

"Some account of the Tayé, a species of sheep." *PMPJ* 2 (1805) Pt. 1: 106–113. Plate with illus., hardly accurate, and 2 molars.

See Supplement 2 *PMPJ* (1807): 193–194. Lewis's report.

RSC.

Ewan Number 106.

[Announcement that "Cervus wapiti" (Barton's name for the American Elk) is to appear in "Fragments Part II."] *PMPJ* 2 (1805) Pt. 1: 113–114.

With a contribution from "Mr. D.T.," pp. 114–117, a poem on the character of the elk; see our no. 120.

"Fragments Part II" was never published.

Ewan Number 107.

"Memorandum on the life of Mr. John Clayton, the celebrated botanist of Virginia." *PMPJ* 2 (1805) Pt. 1: [139]–145.

"Dr. [Bishop James] Madison presents his respects to Dr. Barton with the following particulars relative to Mr. Clayton, which Dr. Galt has been so kind to collect." Barton intends a work devoted to illustrious botanists, physicians and philosophers.

The letter was "From Bishop Madison, to his Son. May 22d. 1805," and received by Barton "May 26th, 1805." John Minson Galt (d. 1808) lived in Williamsburg, Virginia.

Belknap had planned to write biographies of early Americans, and Barton had promised to contribute, but Belknap had died before completing his task.

Ewan Number 108.

"Some Account of the late Professor Vahl of Copenhagen." *PMPJ* 2 (1805) Pt. 1: 145–148.

"His worth and merits have now, for the first time, come into full view. While living, he was too modest to assume the elevated station to which his genius and learning entitled him...He was the greatest naturalist that Denmark ever possessed, but also the ablest of his age." BSB is impressed that His Majesty purchased Vahl's library and herbarium, and that he pensioned not only the widow, but also the six children. Vahl died 24 December 1804.

Ewan Number 109.

"Tribute to the memory of Linnaeus." *PMPJ* 2 (1805) Pt. 1: 149–151.

Barton predicts the downfall of the Sexual System, but Linnaeus's reputation will "Survive the destruction of many of the species which he so ably described."

Ewan Number 110.

"Miscellaneous Facts and Observations," *PMPJ* 2 (1805) Pt. 1: 155–200.

A catchall for many and varied topics including notes from or about Beauvois, Brickell, Blumenbach, Darwin, Dunbar, Ebeling, Matthias Barton, Cuvier, Fabricius, Humboldt, Thouars, and Ventenat, etc., to which Barton often added his own notes. He announced that "*Didelphus Woapink*," Barton's name for the opossum,[3500] is to be published in two parts, and that an abstract of Part 2 has been sent to Mr. Roume of Paris, by whom it will probably be published. Barton himself published the first part (1806) as his letter to Mr. Roume, the second part (1813) as a letter to Professor Reimarus. He also discusses the turkey. Under "medicine" or "Materia medica" he

[3500] [*Didelphis virginiana* Kerr, 1792. MSW.]

gave uses of sycamore, maple, dogwood, and magnolia (Umbrella Magnolia), and commented on the uses of colombo, sulphate of lead, and muriate of lime for goiter.

"Elephantine bones," Miscellaneous Facts, *PMPJ* 2 (1805) Pt. 1: 157.

"Elephantine bones, of two distinct species, continue to be found in North America[3501]...[its] defence or tusk [the Indians imagine is the] *horn* of some large animal: some say the horn of a Snake."

Ewan Number 111.

"Among the Animals which have lately been observed in Missouri Country by Mr. Lewis are the following, viz.:" *PMPJ* 2 (1805) Pt. 1: 159-160.

"Lepus variabilis,"[3502] the marmot,[3503] "Stoat (Mustela Erminea)" and "some species of Sciurus,[3504] the skins of which are deposited in Peale's Museum," the "Leopard," a panther, and *Arctomys citellus* Pallas.[3505]

Ewan Number 112.

"Captain Meriwether Lewis has transmitted to the American Philosophical Society (through the hands of the President of the United States) a number of plants...A Catalogue of these plants (with some account of those which are new or very rare) is preparing for the Society, by one of its members. These specimens, with others which we may hope to receive from Captain Lewis, will serve as the beginning of a Flora Missourica. Editor." *PMPJ* 2 (1805) Pt. 1: 176.

The catalogue not completed by the "member," nor later by Barton.

Ewan Number 113.

"Facts relative to the torpid state of the North American alligator," *J. Nat. Philos.* 12 (1805): 131-133.

RSC.

Ewan Number 114.

"Facts relative to the torpid state of the North American alligator," *Philos. Mag.* 23 (1805): 143-145.

RSC.

Ewan Number 115.

1806

Facts, Observations, and Conjectures relative to the Generation of the Opossum of North America. In a letter from Professor Barton to Mons. Roume of Paris. Philadelphia, Printed by Thomas and George Palmer. 116 High St. 1806.

14 p. 8°.

Copies: APS (2, one a stitched copy to "Mr. Robert Ker, Edinburgh" never sent); ANSP; BPL; LC bound with *Additional Facts relative to the Opossum* (Philadelphia, 1813); Stockholm, Kongl. Vetensk. Bibliot.

Sabin, *Dictionary*, 3807.

3501 [Cf. Mastodon, *Mammut americanum*, and Woolly Mammoth, *Mammuthus*, extinct proboscideans in North America. WSW.]

3502 [A synonym for *Lepus timidus* L., 1758, the European Mountain Hare. MSW.]

3503 [Barton's marmot was likely his "Louisiana Marmotte," the Black-tailed Prairie Dog, *Cynomys ludovicianus*. MSW. WMW.]

3504 [Squirrel.]

3505 [Cf. Prairie Dog. The Pallas name may refer to Prairie Dog but *Citellus* also refers to *Mus citelus* L., 1766, the basis for *Spermophilus citellus*, the European Ground Squirrel. MSW.]

Originally read before the APS 21 Sept. 1804 as "On the uterine- and marsupial gestation from a letter to Professor Autenrieth of Tübingen." APS "Minutes," 362. Barton referred to this title as "for distribution among my friends, a small pamphlet," *PMPJ* 2 (1806) Pt. 2: 192.

Philippe-Rose Roume de St. Laurent (c.1724–1804) was a French government agent in Grenada, in Trinidad until 1797, then in Haiti. He was interested in the natural history of the area and aided Turpin and Poiteau. After the revolution in Haiti all three left for Paris via Philadelphia late in 1801. Poiteau donated a plant collection, now at the Academy of Natural Sciences, Philadelphia; but Roume's name appears in the index of the APS "Minutes" as an elected member, but not in the text. Roume wrote a paper on the pleasures of natural history objects, *J. Phys. Chim. Hist. Nat. Arts* 12: 400–406.

Tucher no. 141.
Ewan Number 116.

Proposals for Printing, by Subscription, Elements of Zoology, or Outlines of the Natural History of Animals... Philadelphia, October 14, 1806.

Copy: APS (Figure 72).

"[Barton] has now in press a work entitled Elements of Zoology. A complete work of this kind has been long wanted and as particularly embracing the habit, &c. of the [animals] of our own country, it will we have no doubt be considered an important acquisition by the American zoologists." "Miscellany" for the *Repertory* (1804) (APS). Before 10 May 1806 BSB had contracted with Turpin in Paris for illustrations: 1. analogy between plants and animals; 2. diagram of the sexual system; 3. three small quadrupeds; 4. "exact design of insects" characters magnified.

Records of a number of subscribers survive, but Barton did not receive sufficient support. The "Elements of Zoology" did not come to fruition. Yet his numerous short publications, his notes to St. Pierre, the birds of his *Fragments*, his Letter to Lacépède, etc., are in the aggregate impressive.

Ewan Number 117.

[In] John Pinkerton, *Modern Geography...* "America" corrected and considerably enlarged by Dr. Barton of Philadelphia... London, 1806.

676 pp., 8°.
Sabin, *Dictionary*, 62959.
Abridged ed. 2.

Ewan Number 118.

[In] *Abrégé de la Géographie Moderne...* Paris. 1806.

2 vols. Vol. 1, xxx, 360; Vol. 2, 361–924. Maps. 8°.
Sabin, *Dictionary*, 62959.
Barton's edition?

Ewan Number 119.

"Account of the Cervus Wapiti, or Southern Elk of North America." *PMPJ* Suppl. 1 (March 1806): 36–55.

Barton gives notes and bibliography.

Ewan Number 120.

"Account of Henry Moss: a white negro; together with reflections on the affection called Leucaethiopia humana; Facts and conjectures relative to the white colour of animals, and Observations on the colour of the human species." *PMPJ* 2 (1806) Pt. 2: [3]–18.

Read before the APS 16 Sept. 1796. Barton's *Leucaethiopia*, cause still unknown, is called vitilago or leucoderma (Corner, *Rush*, 307). Rush had also written on the subject.

Barton had inquired of Heckewelder 29 August 1796 whether any Indians had white patches similar to those of some negroes (Gilbert papers. CPSP). Charles Caldwell wrote, *Autobiography*, 163-164, that he had convinced Barton that the color had been absorbed, not washed away, but that Barton made no reference to him.

In New York, ill on his return from Europe in 1815, he dictated to son Thomas Pennant Barton that he wished to have this paper included, if his works were gathered for reprinting.

Ewan Number 120.

"Some account of Mr. John Banister, the Naturalist." *PMPJ* 2 (1806): Pt. 2: 134-139.

"His descriptions are generally correct, and sometimes elegant. They show him to have been an examiner of the living plants; a botanist not of the closet, but in the Hortus Dei." Barton wrote to Banks in 1796 asking whether Plukenet was available. He had noticed the many citations of Plukenet's works in Linnaeus's *Species Plantarum*, which cites all of the early Virginia species that had been collected by Banister and sent to Robert Morison and Plukenet. Plukenet had reproduced Banister's drawings in his *Phytographia* (London, 1691-1705). These would have been of inestimable help to Barton in his attempts to understand the Virginia and Pennsylvania floras. He obtained a copy of the three-volume second edition (London, 1769) late in his botanical activities, while working on his *Flora Virginica* (Ewan, "Barton's Library"). Banks had given a copy of Banister's catalog to Castiglioni on his departure from England to America in 1785 (James Greenway to Barton 31 January 1793, APS). Greenway may have alerted Barton to Plukenet's *Opera*.

Ewan & Ewan, *Banister*, passim.

Ewan Number 122.

"Memorandums of the lives and literary labours of Mr. William Vernon and David Krieg." *PMPJ* 2 (1806): Pt. 2: 139-142.

Samuel Dale (1659-1739) in his *Pharmaecologia, seu Manuductio ad Materiam Medicam*, ed. 3 (London, 1737) "ought not to have said that the German physician was one of the few eminent chemists of the time," p. 141.

Ewan & Ewan, *Banister*, passim.

Ewan Number 123.

"Logan, Cresap, and Rogers," *PMPJ* 2 (1806) Pt. 2: 142-162.

Barton contrasted the two renderings of Mingo Indian Chief John Logan (c. 1725-1780) by Jefferson in his *Notes on the State of Virginia* (1787), and of Claude C. Robin, *Travels in North America*, translated by Philip Frenau (Philadelphia, 1783): Sabin, *Dictionary*, 72035. Jefferson wrote to Barton from Washington 21 Dec. 1806 that he had not heard the speech and so did not know its authenticity, but had been given a copy by a listener. Barton contrasted the account as given by Robin, who mentions the cruelty of Major [Robert] Rogers in murdering "Lonan's" family. In Jefferson's account it was Col. Michael Cresap. Jefferson's purpose had been to contradict Buffon's and William Robertson's belittling of American life, and as an example he gave the eloquent speech of Logan. Barton called the speech "truly beautiful." For the speech and Jefferson's attempt to authenticate his account, see Jefferson, *Notes*, Query VI, 62-63, and Appendix 4.

Remarks on the Speech attributed by Mr. Jefferson, to an Indian Chief by the name of Logan [Philadelphia, 1806].

vii, 24 pp., 8°.

APS has only the preface.
Ewan Number 124.

"Tribute to the memory of Doctor Thomas Walmsley." *PMPJ* 2 (1806) Pt. 2: 162–167.

"Few young men have passed through life more generally beloved and esteemed...this feeble tribute...to one of the most ingenious and learned of my pupils."

Amos Gregg proposed the name *Walmsleyia* in 1807 for what proved to be *Carya*.
Ewan Number 125.

"Reviews" of a number of medical works. *PMPJ* 2 (1806) Pt. 2: 171–192.

With a note about "Professor Hosack...A Catalogue of Plants contained in the Elgin Botanic Garden...We sincerely congratulate the Professor on the success of his laudable exertions, and shall endeavour, in a future portion of the Journal, to give some account of the Catalogue," p. 192.
Ewan Number 126.

"Obituary, Doctor Daniel Conrad." *PMPJ* 2 (1806) Pt. 2: 207–209.

Richard Peters Barton had written from the farm in Frederick County, Virginia, on 22 September 1806 of the death of this valued physician.
Ewan Number 127.

"Facts, Observations and Conjectures relative to the Elephantine Bones (a different species) that are found in various parts of North America. In a letter from the Editor to Mr. Cuvier of Paris," *PMPJ* Suppl. 1 (March 1806): 22–35.

Barton dated his letter 14 October 1805. Impatient of the appearance of this paper Barton wrote 24 February 1806 to John Conrad, printer, Walnut Street, inquiring when the supplement will go to press, that its promptness bears on his reputation. Four page-proofs, [1], 11, 12, 14, are with his manuscripts, APS.
Ewan Number 128.

"Notice of the botany of the White Mts. in...New Hampshire." *PMPJ* Suppl. 1 (1806): 57–58.

Mostly quotations from Peck with a footnote by Barton that Michaux's species of the Twistedstalk, *Streptopus* were named by the younger Mr. Marshall [Dr. Moses Marshall] as *Bartonia*.
Ewan Number 129.

"Facts and observations concerning the diseases of Rust, as it affects wheat and other cereals. In a letter to the editor, from his brother, Mr. Richard Peters Barton," *PMPJ* Suppl. 1 (1806): 59–62.

The letter, dated 28 August 1805, may have been left with the publisher.
Ewan Number 130.

"Miscellaneous facts and observations." *PMPJ* Suppl. 1 (March 1806): 65–73.

Ornithology, pp. 67–68, on the *Anhinga*; charcoal for fattening poultry, etc. Additional notes on subjects already in print, and including a note on the horned lizard, *Phrynosoma cornutum* Harlan, which Barton named "Lacerta tapajaxin."

"Singular Mus," the Pocket gopher, from Georgia and Florida [*Geomys pinetis*] called "salamander and Earth-rat." He thinks it the *Tuzan* of Hernández, *Tuza* or *Tozan* of Clavigero [*Zygogeomys trichopus*]. It is believed to pass into the torpid state in winter. There is also another species much larger.

A species of *Mus*, nearly allied to *Mus arvalis* [Pallas, 1778, now *Microtus arvalis*, the European Common Vole] is common in Philadelphia and eats potatoes.

Sorex minutissimus Zimmermann [European Miniscule Shrew] has been discovered in trans-Mississippi, in the country that is watered by the Missouri, proof, Barton writes, that North America and Eurasia were once united.

A new species of *Sorex* may be called Black shrew. It has a fetid odor.

Siren lacertina has been in the possession of Mr. Peale. It is two feet long, endowed with great strength, has no toenails, eats grass and meat. It is a "finished animal."

Peck has detected the Sphinx Moth so destructive to the Black Locust *Robinia pseudoacacia*. An Elator was probably introduced into Pennsylvania from Jamaica with mahogany.

The president had sent him a specimen of the Cotton Tree or Cottonwood, *Populus deltoides*. Walmsley had sent him *Sal ammonia* [Ammonium Chloride].

"Mus Tuza" was also published in J. H. Voigt, editor, *Magazin für den neuesten Zustand der Natur-kunde* 12 No. 6 (1806): 488, as cited in E. Raymond Hall and K. R. Nelson, *Mammals of North America* (New York, 1959, 2 vols.) 1: 488.

Ewan Number 131.

"Review." *Additional Facts and Observations relative to the Nature and Origin of Pestilential Fever*. By the College of Physicians of Philadelphia. Philadelphia, printed by A. Bartram, for Thomas Dobson...1806. *PMPJ* Suppl. 1 (March 1806): 92–98.

Mentioned in Ralph H. Major, *A History of Medicine* (Springfield, Ill., 1954) 2: 767. Not seen.

Ewan Number 132.

1807

A Discourse on some of the principal Desiderata in Natural History, and on the best Means of promoting the Study of this Science in the United States. Read before the Philadelphia Linnaean Society on the Tenth of June, 1807, by Benjamin Smith Barton, M.D., President of the Society; one of the Vice-Presidents of the American Philosophical Society; and Professor of Materia Medica, Natural History and Botany, in the University of Pennsylvania. Philadelphia, Printed by Denham & Town. No. 278 South Second Street. 1807.

[i–iii], [6]–90; Appendix of "Notes," [77]–90.

Reviews: BSB in his *PMPJ* 3 (1807) Pt. 1: 165–175; Clinton, *Discourse*, p. 56: "an ingenious and learned work."

Sabin, *Dictionary*, 3805; Mengel, *Ellis* 1: no. 181; MacPhail, *Barton*, 8–9.

Copies: APS, 2 copies, one with the inscription "Adam Seyberts'," the other from Barton 21 Aug., *teste* John Vaughan; ANSP, Donated by Mrs. BSB (*J. Acad. Nat. Sci. Philadelphia* 1 (1817): 203; BPL, 2 copies; HEH from Rosenthal of Oxford, with library stamp of Lisbon monastery with crown, no annotations, uncut copy; UK; LC, Linnaean Soc. duplicate stamp, bound with *Flora Virginica*; NYBG; Dublin, Royal Irish Acad., no ownership recorded; Stockholm, Kongl. Vetensk. Bibliot.; PH, bound with *PMPJ* Suppl. 1–3.

"Originally dawn up, without the most distant view to publication...but I was urged to pronounce it in a more public manner, before a large and mixed audience..." (Preface [1]; dated 12 August 1807).

A memo torn apart from another manuscript, which by date may relate to this: "For Mrs. Barton with Barton's best respects. August 24 1807. Mrs. B is requested not to let the pamphlets out of her hands." Surely to one of the sisters-in-law.

Barton had concluded his talk before the members of his Linnaean Society: "I cannot but feel proud of associating myself with you; of attaching myself more firmly to the studies in the pursuit of which I have passed the happiest hours of my life."
Tucher no. 134.
Ewan Number 133.

"On the use of Peruvian Bark, given in large doses in the Malignant Yellow Fever." *PMPJ* Suppl. 2 (July 1807): 103–113.

Barton read that Dr. Tadeo Lafuente of the Royal Armies, Gibralter, showed with "well-proved and decisive Observations" that "Yellow-Fever loses all its contagious force in a Cottage." Also that it may be kept off or cured, by [Cinchona] bark, used in a manner entirely new and distinct from any commonly practiced. There must be no time lost in taking the bark—from the first moment of the first chills every two hours an ounce, or ½ oz. & at least 3 drams. Pills of a paste must be made. The reason that cottages prevented contagion was due to their porous circulation! How closely the doctor had missed the point!
Ewan Number 134.

"Additional Facts and Observations relative to the Extinct Species of American Elephants. In a letter from the Editor to Mons. Cuvier of Paris." *PMPJ* Suppl. 2 (1807): 166–173.

The letter dated 1806. "see First Suppl. [1806] p. 22–35."
Ewan Number 135.

"Miscellaneous Facts and Observations." *PMPJ* Suppl. 2 (1807): 193–198.

With notes on several animals, e.g., Tayé, 193–194; "Capt. Lewis and Clark met with Antelope"; another antelope "not so well known" from the mouth of the Arkansas River; and Hellbender, 196–197. "Medical facts": the use of *Frasera walteri*; a note on *Helenium autumnale* [Bitterweed, Sneezeweed].
Ewan Number 136.

"Additional facts and observations relative to the American locust." *PMPJ* Suppl. 2 (1807): 181–187.

Barton adds to earlier papers by Calvin Jones, William Bartram, and others, which appeared on pp. 173–178.
Ewan Number 137.

1808

Studies of Nature, by James Henry-Bernardin de Saint-Pierre translated by Henry Hunter, D.D.... with the addition of numerous original notes and illustrations by Benjamin Smith Barton, M.D.... in Three Volumes. Philadelphia, Birch and Small. 1808.

Vol. 1: xliii, 417, frontispiece, Pl. II; vol. 2: vii, 504, Pl. III, IV, V; Vol. 3: ii, 3–493.

Copies: APS, signature of Christian V. Keener, Jr.; Ewan, "John Spence" signature on title page; HEH, Vol. 1, dedicatory note from "De Saint Pierre, 29 Pluvoise an 10" to "Citoyen Meslin," tipped in; New York Acad. Med.
Ewan Number 138.

Some Account of the Siren lacertina, and other Species of the same Genus of amphibious Animals. In a letter from Professor Barton, of Philadelphia to Mr. Gottlob Schneider, of Saxony. Philadelphia, 1808.

34 pp., 1 pl. 8°.

Copies: APS; LC; Stockholm, Kongl. Vetensk. Bibliot.

Sabin, *Dictionary*, 3824.

Preface signed 19 August 1808.

Barton admitted in a letter to Lettsom, along with one of the fifty copies printed, that he had not sent the letter to Schneider. He was sending copies to friends.

Barton also mentioned Siren quadrupeda here, which Custis had discovered in Louisiana and had reported to Barton in his letter 1 June 1806 as *Syren quadrupeda*. Known locally as three-toed Congo eel, this is now known as *Amphiuma tridactylum* Cuvier.

Barton closed his account of Siren lacertina by stating that "every naturalist should assume to himself the privilege of delivering his sentiments with entire freedom; and that science frequently suffers as much from an excess of reserve as from a prompt, or even ardent, decision."

Tucher no. 150.

Ewan Number 139.

"A discourse on some of the principal desiderata in Natural History, and the best means of promoting the study of this science in the United States." *PMPJ* 3 (1808) Pt. 1: 165-175.

In effect an advertisement for his book of the same title, which had been published in 1807. Barton had delivered the lecture before the Philadelphia Linnaean Society.

Ewan Number 140.

"Review: A Compendium of the theory and Practice of Midwifery...by Samuel Bard, M.D., New York: Collins and Perkins. 1807." *PMPJ* 3 (1808) Pt. 1: 176.

"A Work of considerable merit."

Ewan Number 141.

"Obituary" of "The Celebrated naturalist, J. Chrst. Fabricius, died in Denmark, in the month of March, last." *PMPJ* 3 (1808) Pt. 1: 187-189.

Ewan Number 142.

"Obituary" of "Dr. John Redman." *PMPJ* 3 (1808) Pt. 1: 189-190.

Redman, M.D. Leiden 1748, his thesis "De Abortu," died at 86 years. Practiced not less than forty years in Philadelphia. An "active and attentive physician...Except his inaugural specimen, and two or three fugitive essays [he published nothing relative to medical subjects] and so left behind scarcely an important memorandum of what he observed, whether good or bad in medicine." Was there a little malice expressed here, because of the enmity between John Redman Coxe and Barton?

Ewan Number 143.

1809

Specimen of a Geographical View of the Trees and Shrubs, and many of the herbaceous plants of North America, between the latitudes of seventy one and twenty five. Illustrated by plates. Philadelphia, C. and A. Conrad and Co., 1809.

10, 26 p. 4 pl. 8°.

Copy: the only one known, Yale Univ. Med. School Library, the one sent to Jussieu.

In the Preface Barton wrote:

"My vanity leads me to suppose, that to my friends at least,—those to whom the work will be submitted, long before it shall be thrown upon the public,—some account...will not be wholly unacceptable...In the winter of 1795-1796, I first began..."

Pritzel, *Thesaurus*, 439, Jussieu's copy seen at Paris; Meisel, *Bibliography*, 3: 369. Ewan, *Short History*, 115; McPhail, *Barton*, 9-13 with bibliographic detail.

Probably a proof-pull, incomplete, no illus. [It was to have contained about 400 pages.] (Figure 45). Dedicated to Antoine Laurence de Jussieu, pp. [5]–7. The essay had been read before the APS 7 Feb. 1800. A proposal for publishing was dated 1 June 1808 (at APS).
Ewan Number 144.

"Hints on the etymology of certain English words." *Trans. Amer. Philos. Soc.* 6 (1809): 145–157.

Read before the APS 21 Oct. 1803; referred to committee 4 Nov. 1803, and reported for publication 2 March 1804. Further notes on the similarity of words in other languages with those of the American Indian.
Ewan Number 145.

"Facts and speculations relative to the diseases that are common to the human kind, and other families of animals. By the Editor." *PMPJ* Suppl. 3 (1809): 266–288.

A review inspired by Blumenbach's *De Generis Humani Varietate Nativa liber* (Göttingen, 1775).
Ewan Number 146.

"Obituary" for William Shippen announced. *PMPJ* Suppl. 3 (1809): 309.

Barton intended a "sketch of the Character" of his "preceptor and friend."
Ewan Number 147.

"Obituary" for Matthias Barton. *PMPJ* Suppl. 3 (1809): 309–312.

A skilled artist to whom he was much indebted, "brother and friend."
Ewan Number 148.

"Supplement to the account of the Dipus Americanus in IV vol. of the Transactions of the Society." *Trans. Amer. Philos. Soc.* 6 (1809): 143–144.

"A Jerboa taken up in the Torpid State by Mr. Bartram near this city" was exhibited at an APS meeting 18 Feb. 1803. The paper was referred to Mr. Peale 16 Dec. 1803, and "Barton's Jerboa reported and ordered for publ." 20 Jan. 1804. Such were the delays in publication. [Meadow Jumping Mouse, *Zapus hudsonius*.]

RSC.
Ewan Number 149.

1810

Collections for an essay towards a Materia Medica of the United States. By Benjamin Smith Barton, M.D., Professor of Materia Medica, Natural History and Botany, in the University of Pennsylvania. Part First. The Third Edition, with Additions. "Alit impetum persuasio non in sterili me campo labore, dum vires ad illam scientiam intendo, quae praxeos medicae alter oculus est." J. A. Murray. Philadelphia, Printed for Edward Earle and Co., Frye and Kammerer, Printers. 1810.

2 parts, bound together. xvi, 67; xv, 53. 8°

Copies: APS; ANSP, donated by Mrs. Barton; Duke Med. Center Libr.; BPL; HEH with bookplate of Dr. J. Dove, Richmond, Virginia; HTML, copy 1, handwritten index on 5 front and back leaves, "abt. 100 plants," hand unknown; HTML, copy 2, inscribed on front leaf, "Thos. E. Dougherty, Bought of Samuel Clarke Olivires. November the 23, 1819"; NYBG (Hosack's copy? but no signature), penciled index on front cover and papers and newspaper clippings pasted on back cover.

Sabin, *Dictionary*, 3904; *TL-2*; Austin, *Imprints*, no. 140; MacPhail, *Barton*, 14–15.

Dedicated to the students of medicine in the University of Pennsylvania, 12 Dec. 1810. Reproduces title page of Part I (1801), and his dedication to Lettsom in Part II. He hopes to produce a "third part" in the ensuing autumn.

Barton's manuscript of 8 volumes in scrapbooks, pasted and arranged, is at Univ. Wisconsin (Jeffries, "Materia Medica," 69–71).

Tucher no. 133.

Ewan Number 150.

"Mineralogical Notice respecting Fluate of Lime from Virginia. Communicated by Benjamin S. Barton, M.D., Professor of Botany, Materia Medica, and Natural History, in the University of Pennsylvania, in a Letter to the Editor." *Amer. Mineral. J.* 1 (1810–1814): 79–80.

RSC.

Barton had submitted the article after his tour through western Virginia in the summer of 1810, his contribution to the first mineralogical journal in the United States, founded by Archibald Bruce, the first scientific geologist in the country.

"Of all the branches of natural history, there is not one which has been cultivated with so little attention, zeal, or success...This, however, is a science of great curiosity and importance, and is, in an especial manner, entitled to the notice of Americans" (*Discourse*, 51–52).

Ewan Number 151.

"On the torpidity of animals" to Mr. Tilloch. *Philos. Mag.* 35 (1810) no. 144: 241–247.

RSC.

Barton reviewed Henry Reeve's "An Essay on the Torpidity of animals."

Ewan Number 152.

"Letter to Thomas Jefferson...concerning the Elephas Mastodontus, and Elephas Primigenus," *National Intelligencer* (1810) [not seen].

Barton republished the letter in *Archaeologiae Americanae*, 28–33. On p. 28 he writes "This letter originally appeared in the *National Intelligencer*, published at Washington, soon after it was written, and was afterwards copied into the *Aurora*, and many other public prints, in various parts of the United States." He concluded that the American "great mammoth, the Chemung mammoth" was a different species of elephant from the Asiatic one.

Ewan Number 153.

"Letter from Doctor Barton to Thomas Jefferson...dated Blue Ridge, vicinity of Paris, Virginia, July 13, 1810."

Port Folio, ser. 3. 4 (1810): 340–344.

Ewan Number 154.

"On Moles." *Mem. Philadelphia Soc. Promot. Agric.* 2 (1810): 137–139.

Manuscript sent as a letter to the editor, Judge Richard Peters, "recd. Jany 9th 1810" and after publication was returned to Barton since he "kept no copy." He found moles on the whole beneficial to the soil, stirring it up.

Ewan Number 155.

1812

Elements of Botany: or Outlines of the Natural History of Vegetables. Illustrated by forty plates. By Benjamin Smith Barton M.D., President of the Philadelphia Linnaean and Medical Societies, One of the Vice-Presidents of the American Philosophical Society, Member of the Imperial Society of Naturalists at Moscow in Russia and

Professor of Materia Medica, Natural History, and Botany in the University of Pennsylvania. The Second edition, corrected and greatly enlarged. In two volumes. Vol. I Philadelphia, Printed for the author. 1812. Volume 2 with same title page, 1814. Vol. 1: xviii, 324, index 20, pl. 1–5, 32–33. (NYBG). Preface dated 27 March 1811.

Vol. 2: iv, 72, 80, appendix 44, pl. 6–31, 34–40. Preface dated 25 April 1814.

Copies: Usually the 2 volumes are bound in one: APS; ANSP; BPL; UK, vol. 1, 310 pp. plus index, 20 pp., Vol. 2, 188 pp., 30 pl.; NYBG; New York Acad. Med. Libr.; UC Biol. Lib., xviii, 324 pp., index 20 pp., pls. 2–3, 32–33, Edward Harris copy, his signature on title page but no annotations; John Crerar Lib., same but only 7 pls.; UPenn vol. 1: 308 pp., vol. 2, iv, 180 pp. append. pls.; PhP.

Pritzel, *Thesaurus; TL-2;* Sabin, *Dictionary*, 3806 note; McPhail, *Barton*, 17–18.

See our Chapter XIII, America's First Textbook of Botany.

Tucher no. 138.
Ewan Number 156.

[Unsigned natural history notes in] *The American Edition of* [Brewster's] *the New Edinburgh Encyclopaedia*...and now improved, for the greater Satisfaction and better information of the People of the United States, in the Civil, Religious, and Natural History of their Country, in American Biography, and in the Great Discoveries in Mechanics and the Arts. Philadelphia: Published by Edward Parker, No. 178, Market Street, & Joseph DeLaplaine No. 207, North Third St. Sold by [etc.] William Brown, Printer, 1812. In 36 volumes 1812–1831.

David Brewster (1781–1868), see C. D. Sherborn in *J. Soc. Bibliogr. Nat. Hist.* 1 (1937): 112.

Barton is mentioned first in list of 32 contributors. Other Americans were: Robert Beard, M.D.; Archibald Bruce, M.D.; Charles Caldwell, M.D.; Thomas Cooper, Professor of Chemistry, Carlisle; John Redman Coxe, M.D.; John Synge Dorsey, M.D., Professor of Surgery in the Univ. Penn.; Peter Duponceau, Esq.; Andrew Ellicott, Esq.; John W. Francis, M.D.; Robert Fulton, Esq., Fellow APS, U.S. Military and Philos. Soc.; James Gray, D.D.; Ashbel Green, D.D., Pastor 2nd Presb. Church, Philadelphia; John Griscom (1774–1852), Lecturer on Chem. and Nat. Philos. (b. New Jersey, taught high school); Robert Hare, Esq. (1781–1858), b. Philadelphia, chemistry prof. Univ. Penn. 1818–1847; William Hembel, Jr. (1764–1851), physician, President ANSP 1840–1850, b. Philadelphia; David Hosack, M.D., Univ. New York; Charles Jared Ingersoll, Esq. (1782–1852), b. Philadelphia, lawyer; Thomas C. James, M.D., Prof. Midwifery, Univ. Penn.; Benjamin Latrobe, Surveyor of Public Bldgs. of US; Robert R. Livingston, LLD, Prs. Amer. Soc. Fine Arts, NY corres. member of the Agricultural Soc. of the Seine, &c. &c. &c.; James Mease, M.D., member Agric. Soc. Phila.; Edward Miller, M.D.; Samuel L. Mitchill, M.D., Univ. New York, Fellow APS, Boston, Marseilles, Leghorn, &c. &c. &c.; Valentine Mott, M.D. (1785–1865), b. Long Island, surgeon Columbia College; Robert Patterson, Prof. math., nat. philos., Univ. Penn.; Benjamin Rush, M.D., Professor of the Institutes and Practice of Medicine, and of Clinical practice, in Univ. Penn.; John Augustine Smith, M.D., Royal College of Surgeons, London, Prof. of Anatomy and Surgery in the Univ. of New York; James S. Stratham, M.D.; James Watts, M.D.; William White, D.D., Bishop Protest. Episc. Church, State of Penn.; Charles J. Wistar, Esq.; Rev. Samuel B. Wylie, A.M., Pastor Reformed Presbyterian Church in Philadelphia.

Copy: ANSP.

Ewan Number 157.

Professor Cullen's Treatise of the Materia Medica, with large additions, including many new articles, wholly omitted in the original work. By Benjamin Smith Barton, M.D., one of the Physicians in the Pennsylvania Hospital; and Professor of Materia Medica, Natural History and Botany, in the University of Pennsylvania. In Two Volumes. Vol.

I. Philadelphia, Published by Edward Parker, no. 178 Market Street. William Brown, Printer, Church Alley, 1812.

Vol. 1: xxiv, 319 pp. index to both vols. 305-319. (Figure 26). Vol. 2: 320-421.

Copies: APS; Ewan, Vol. 1; HTML, Vol. 2; HEH, bkpl. of "Doctor J. Dove, Richmond, Va." no date or annotations; New York Acad. Med., 2 vols.; PH, bound with *Discourse*; Welcome Libr.

Review: "...its unprecedented kind of interpolation of additional articles throughout the text [indicated by brackets and stars] singularly confound the attention, as the editor speaks, much in the same style as the author...They might have been as easily, and with great propriety thrown to the bottom of the page, or at the end of the chapter." *Med. Repos.* n. ser. 1 (1813): 372, of 363-372.

MacPhail, *Barton*, 18-19.

Collen's Preface, v-vi, and dated Edinburgh, March 1789.

The Editor's Preface, Philadelphia, Dec. 23, 1812. "The public is now presented with the fourth American edition of Professor Cullen's Treatise..." xiii-xix. Contents for both volumes [xx]-xxiv. Copyright 11 Nov. 1812. Text begins with the history and chief writers on materia medica.

Announced on back cover, *verso*, of Brewster's *Edinburgh Encyclopaedia*, Vol. 2, pt. 2 (1813), "with great additions and improvements."

To Peck as a postscript: "Please to inform Dr. Bigelow, that my edition of Dr. Cullen's Mat. Medica with large additions, is completed and finished." 24 January 1813.

Barton, p. xvii: "Chemistry since the death of [Cullen], has undergone a revolution: a revolution more complete than that which has marked the history and progress of any other science, within the same period of time."

Tucher no. 517.

Ewan Number 158.

Flora Virginica; sive plantarum, praecipue indiginarum, Virginiae historia inchoata. Iconibus illustrata. Studio et cura Benjamin Smith Barton, M.D.... Pars Prima. Philadelphiae. Typis D. Heartt. 1812.

xii, iv, 24, 33-74. But there were no illustrations. (See our Figure 44.)

TL-2; Sabin, *Dictionary*, 3807; Pritzel, *Thesaurus*, 438; MacPhail, *Barton*, pp. 15-17.

Review: *Med. Phys. J.* 28: 517. Not seen.

Copies: APS, "Presented by Mrs. Barton"; ANSP; LCP; FLP; LC, Toner Library stamp, signature on half title "William P. C. Barton 1817," bound with *Discourse, Memoir concerning the Hell-Bender, Additional Facts relative to the Opossum, Facts relative to the Opossum, Archaeologiae Americanae*, no signatures. No copy is listed in Joseph Decaisne, *Catalogue de la Bibliothèque Scientifique de MM. de Jussieu* (Paris, 1857).

Dedicated "to those of my pupils...who feel an interest in the extension of knowledge of the history of plants in the United States...is, with much respect, inscribed by Benjamin Smith Barton July 24, 1811."

In the preface he credits the merit of the work of Clayton and Gronovius, and since Clayton is almost out of print, and its need by American botanists, he has attempted to render the work more complete. He admits leaving out some of Gronovius's references.

He makes abundant references to his contemporary authors, Michaux, Walter, John and William Bartram, Abbot, Persoon, Muhlenberg, Josslyn, Schoepf, "my Massachusetts friend" Cutler, and to his own travels in Virginia, New York, and along the Potomac, often with dates of visits, but he makes only a mention of Pursh, on p. 21.

"My professional engagements, my duties as a teacher, my bad health, and the diversity of my pursuits, have all conspired to prevent me from accomplishing *one* of my favorite literary pursuits. And it is with no small difficulty that I now present to the public the First Part of my plan."

And again: "My journeys...my inquiries...have enabled me to augment, so greatly, the catalogue of the vegetables of Virginia. Nor must I omit to say, that I have derived great assistance from the large herbaria which have either been collected at my expense; or liberally communicated to me by my pupils, and others" (ix). He had also written: "It may, I hope, without any degree of arrogance claim the title of an entirely new work, and as such it is announced to the public in the first title page." (vi).
Tucher no. 142.
Ewan Number 159.

Memoir concerning an animal of the Class Reptilia, or Amphibia, which is known in the United States, by the names of Alligator and Hell-Bender. by Professor Barton. Philadelphia: Printed for the Author. Griggs and Dickinson, Printers. 1812.

iv–, 5–, 26, 1 pl. 8°. (See Figure 69).

Review: Dr. J. A. Albers of Bremen in *Allg. Lit. Z.* (August 1814): 634–638; (March 1815): 414–415. (APS, Pamphlets v. 1108, no. 13).

Copies: APS; BPL; LC bound with *Flora Virginica*, marked "From Mrs. Barton"; Ewan.

Copy sent by Wistar (?) to Camper in Franeker.

Sabin, *Dictionary*, 3812.

The animal is now known as *Cryptobranchus alleganiensis.*

Barton's memo of 4 May 1812: "a few copies now being printed for me by Dickinson" (HSP, Barton correspondence f. 98).

"Memorandum. Some of the first pages of this memoir were actually printed off in 1812, as is indicated by the title-page. The essay was then laid aside, principally because the original materials (letters from my correspondents,–memorandums, notices, &c., written upon loose scraps of paper, in my usual way) were mislaid, and could not, without some trouble, be discovered...August 5, 1814."
Tucher no. 145, 146.
Ewan Number 160.

"On the native country of the Solanum Tuberosum, or Potatoe." *J. Nat. Philos.* 31 (1812): 290.

Among Barton's papers, APS, is "Potatoes, coffee, corn, etc.," undated, upon which he may have based this article. It reads: "In the Transactions of the Horticultural Society of London, there is a paper by Sir Joseph Banks, on the native country of the Solanum tuberosum, or Potatoe. I have read this paper with much satisfaction, but as my opinions on some points relative to this question, are different from those of the learned and ingenious Baronet I have drawn up with out much regard to order, this memoir, which I beg leave to read for the entertainment of the American Philosophical Society.

"Sir Joseph Banks thinks it very certain that the potatoe though not exclusively a native of Virginia was actually imported [memo torn here]."

The paper was taken to England by Priestley's son, Joseph, and delivered to Dr. John Mason Good, who passed it on to Nicholson. "Do the Indians cultivate the common potato?" was a question Barton had put to Heckewelder 15 January 1796 (HSP).

In a memo to himself, dated 14 Sept. 1812, Barton wrote that William Bartram had never seen *Solanum tuberosum* cultivated among the Indians, but only by white settlers, and that he found Sweet potatoes "very much cultivated," and that "the Creeks, in a manner lived upon them." Bartram did not consider *Solanum tuberosum* a native of North America.

BSB was attempting to correct long-held fallacies concerning the occurrence of the white potato and its distinction from the Sweet potato, *Ipomoea batatas.* John Gerard, *The Herball* (London, 1597, reissue of 1636), 927, published the first illustration of the

whole plant of *Solanum tuberosum*, but mistakenly labeled it "Battata Virginiana, sive Virginianorum & Pappas, Virginian Potatoes." Gaspard Bauhin in his *Prodromos Theatri Botanici* (Frankfurt-am-Main, 1620), named and illustrated "Solanum tuberosum esculentum," relating it to the nightshades. John Parkinson, *Theatrum Botanicum* (London, 1640), 1383, reproduced Bauhin's drawing, but used Gerard's name, "Battatas Virginiana." To add to the confusion, Gerard, *Herball* (1636), 925, had illustrated the stems, leaves, and root of the Sweet potato, labeling it "Sisarum Peruvianum, sive *Batata Hispanorum*, Potatus, or Potato," growing in "India, Barbarie, Spaine, and other hot regions." Before 1692 John Banister, living in Virginia, had stated that he had not seen the Andean potatoe that his correspondent called "the Virginia kind," but that the "Spanish kind" from the West Indies was common. Ewan & Ewan, *Banister*, 358, 369-370, n. 51, discusses the confusion.

At Princeton, 21 Nov. 1815, Barton, dying, dictated to Thomas Pennant Barton his wish to have this paper included in what he hoped would be a gathering of his papers (Barton correspondence, f. 104, HSP).

Ewan Number 161.

"Desultory observations concerning certain vegetable Muscicapae." *Philos. Mag.* 39 (1812): 107-116.

Barton reports that *Asclepias*, *Nerium oleander*, and *Leersia* often entrap small flies. He does not know how *Befaria* catches flies. About *Sarracenia* Barton designs a memoir, but he thinks "it sufficiently evident that nature has taken some pains (if it be allowable to use such language in speaking of the works and operations of Nature) to solicit insects into the ascidia...We might perhaps with some degree of reason imagine that this faculty is, somehow or other, subservient to the business of vegetable nutrition" in the cases of *Dionaea* and *Sarracenia*, but never to *Apocynum* [Dog Bane], *Nerium*, or *Asclepias*.

On *Leersia lenticularis* Michaux, Catchfly Grass, Pursh says he "communicated specimens with this particular circumstance" to Barton "who has made mention of it in a paper on the irritability of plants" (*Flora*, 1: 62). Nuttall, *Genera* 1: 48, also mentions this trait. Had he heard of it from Barton?

Barton kept a "very exact copy" of his letter to Tilloch on submitting "Desultory observations":

"Dr. Barton presents his respects to Mr. Tilloch, and encloses a paper intended for the Philosophical Magazine. This paper has never been printed, or published. Should Mr. Tilloch not find it convenient to give it an early admission into one or more numbers of the magazine, Dr. B. particularly requests that the paper may be handed to Mr. Nicholson, for his Journal. Dr. Barton being fully sensible that his handwriting is very often indistinct, begs that the paper may be printed with great care. Perhaps, Dr. Barton's friend, Mr. J. M. Good would undertake to look at the sheets, as they came from the Press. September 5th, 1811" (Barton papers, APS).

Ewan Number 162.

1813

Additional Facts, Observations, and Conjectures relative to the Generation of the Opossum in North America. In a letter from Professor Barton to Professor J. A. H. Reimarus, of Hamburgh. Philadelphia. Printed by S. Merritt, Watkins Alley, 1813.

24 p. 8°.

Copies: APS; HSP; LC, bound with *Flora Virginica*.

Review: Johann F. Blumenbach in *Allg. Lit.-Z.* 80 (April 1814): 633-638.

Sabin, *Dictionary*, 3802.

Barton, on p. 19: "But I am not aiming at anything like method. I am endeavouring to amuse you." Until he has determined whether the opossum fetus is

"attached by a naval string" he cannot think of submitting to the public his long promised memoir on the North American Opossum. He dated his article 3 May 1813, as written in Lancaster.
Tucher no. 128.
Ewan Number 163.

"Appendix" to *Memoir of the Life of David Rittenhouse, LLD. F.R.S. Late President of the American Philosophical Society, &c.* Interspersed with various notes of many distinguished men. With an Appendix containing sundry Philosophical and other papers, most of which have not hitherto been published. By William Barton, M.A., Counsellor at Law; Member of the American Philosophical Society, The Mass. Hist. Society, and the Royal Society of Valencia, in Spain. Philadelphia: Published by Edward Parker, no. 178, Market Street, W. Brown, Printer, Church Alley. 1813.

Portrait frontispiece 603-608.
Ewan Number 164.

1814

A Memoir concerning the Fascinating Faculty which has been ascribed to various Species of Serpents. A New Edition, greatly enlarged and embellished with a Plate. By Professor Barton. Philadelphia, Printed for the Author, by W. Brown, 1814.
xiii, 76 pp., large folding plate. 8° (Figure 60).

Copies: APS; ANSP, donated by Mrs. BSB; BPL; HEH, plate bled in binding, bookplate of Frederic Rowland Marvin; HTML, which from lettering on the spine had been Rafinesque's copy, purchased from a bookseller in Australia; New York Acad. Med., pl. missing; Paris, Mus. Hist. Nat.

Dedicated to Lacépède; preface to new ed., v-vii; old title [ix]; Dedicated to Rittenhouse, xi-xii; old preface xiii; text [7]-76. The plate, two drawings of *Crotalus*, R. Scot sculpt. but with no artist indicated, had appeared in Palisot de Beauvois, "Memoir on Amphibia," *Trans. Amer. Philos. Soc.* 4 (1799): 362-381 (Figure 61).

Barton writes that his first *Memoir concerning the Rattle-snake* was a "juvenile performance...sometimes rather puerile. Some of the original notes are reprinted, some have been suppressed; many new notes have been added...Not a few...are translations from those which the late professor Zimmermann...annexed to the translation which he made of my memoir."

This "new and enlarged edition" contains two figures on the folding plate, one of the Timber rattler, *Crotalus horridus*, in the act of striking its prey, and the Diamondback, *Crotalus adamanteus*, which had been named by Palisot de Beauvois in 1799, and *Crotalus rhombiferus*[3506] "by the late Dr. John Brickle [Brickell] of Savannah," *PMPJ* 2 (1805) Pt. 1: 164, and 166. Is it significant that Palisot de Beauvois did not mention Barton in his article, nor did Barton give the source of his illustration? Had Palisot been influenced in his attitude toward Barton by Peale?
Tucher No. 148.
Ewan Number 165.

*Elements of Botany: or Outline of the Natural History of Vegetables...*Vol. II. Printed for the Author, 1814.

See *Elements*, 1812: Vol. I and II.

Archaeologiae Americanae telluris Collecteana et Specimina. Or Collections, with specimens, for a series of Memoirs on certain extinct animals and vegetables in North

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3506 [Perhaps Bricknell saw Latreille's name *Crotalus rhombifer* published in 1801.]

America. Together with Facts and Conjectures relative to the ancient condition of the lands and waters of the Continent. Illustrated with engravings. Part First. Philadelphia. For the Author. 1814.

vii, [9]–64. 8°.

Review: A. Mierst in *Allg. Lit.-Z.* (March 1815): 425–429, of a copy sent to Germany.

Copies: APS; LC, bound with *Flora Virginica*; Rush Med. Libr. Chicago; John Crerar Lib., Chicago. Proof was sent to Archibald Bruce (Greene, *Minerology*).

Sabin, *Dictionary*, 3803.

The only part printed, and no illustrations. Dedicated to John Mason Good. Preface dated 7 October 1814.

Archaeologia Americanae contains: letter to Cuvier on Elephantine bones from *Philosophical Magazine* (1805); letter to Jefferson on two species of *Elephas* from *National Intelligencer* (1810), concerning Indian account of the discovery of several mammoth skeletons near the River Ohio; Reimarus letter with questions relative to American elephantine bones, and Barton's answer; additional speculations on extinct species; and a fabricated Indian tradition from *American Museum* (1790): 284-285.

In his preface Barton refers to "The delicious pursuits of natural history."

Barton referred to this work, in writing to the American Antiquarian Society in July 1814, as an "extended edition" of *New Views.*

Tucher no. 129.

Ewan Number 166.

"Ueber die Fortplanzungsart des amerikanischen Beutelthiers aus dem Englischen vom Prof. Lichtenstein." *Braunschweig. Mag.* stück 12, Mars 19, 1814.

Not seen, APS Catalogue.

On the reproductive process in American marsupials.

Ewan Number 167.

1815

"On meteoric stones." *Philos. Mag.* 46 (1815): 154–155.

The terrestrial emigré, the "fireball" fell on Weston, Connecticut, 14 December 1807, exciting wide popular interest. Woodhouse, Seybert, and Silliman were all involved in reporting it. Silliman had given fragments to Seybert on his visit to Philadelphia in 1808, the specimens no. 538 and 539 at the ANSP (Greene & Burke, "Minerals," 24–29, 97–98).

Barton, always anxious to spread American news to Europe, and having read a number of articles the magazine had carried on a meteor sighted in England the previous year, sent in this contribution. He quotes the Latin of Michael Bernhard Valentin from *Acta Phys.-Med. Acad. Caes. Leop.-Carol. Cur.* 2 (1730): 280. He regrets that Valentin did not give "minute information" or "size and form" of the crystals that fell. Stones falling are "not more improbable than masses of iron, nickel." This article was included in the list dictated to Thomas Pennant Barton at Princeton 21 November 1815, which Barton hoped would be gathered for republication (Barton manuscripts, HSP).

Ewan Number 168.

1816

First Lines of the Practice of Physic. By William Cullen, M.D. Late Professor of the Practice of Physic, in the University of Edinburgh. With Notes and Selections, from Various Writers since the time of Cullen. By B. S. Barton, M.D. In two volumes. Vol. I. Philadelphia: Published by Thomas Dobson, at the Stone House, no. 41, South Second Street. 1816.

8".

Only Vol. 1 with Barton's name on title page.

This was from Cullen's translation of Albrecht von Haller (1708–1777) *Primae Lineae Physiologiae in Usum Praelectionem Academicarum* (Göttingen, 1751 and later editions), no. 585 in Morton, *Medical Bibliography*. Cullen first published his translation in Edinburgh, 1778, 4 vols., with new editions in 1784 and 1789. A copy of Cullen's *First Lines* is in LCP.

So far as we have been able to learn, the only known copy of this title with Barton's name on the title page is at New York Acad. Med., copied in Shaw-Shoemaker microcard set, item 37369.

After Barton' death, the printer reset the title page removing Barton's name and adding his own, William Fry, Printer. Austin, *Imprints*, 575, lists 9 libraries with copies of this title, but without Barton's name on the title page. CPSP; LC; New York State Libr.; U.S. Surg. Gen. Libr.; Washington University; Middleton College.

Barton's *First Lines* is not to be confused with Charles Caldwell's edition of Cullen's *First Lines...With notes and Observations, Practical and Explanatory, and a Preliminary Discourse, in the Defense of Classical Medicine* by Charles Caldwell, M.D. (Philadelphia, 1816, 2 vols.), Austin, *Imprints*, 574. The preface was dated 1 Nov. 1816, and the text quite different.

Among Barton's papers at the APS rests the page-proof of "Practice of Physic," vol. 1: 169–352, uncorrected. On p. 313 in an unknown hand: "Rough proof for Dr. Barton's File."; on p. 257: "Dr. Barton First proof (proof to be returned.)"; p. 261 "and other eminent English practitioners," in Barton's hand; p. 280, proofs missing but 2 loose addenda laid in, written in Barton's hand; p. 289 "Dr. Barton Proofs to be returned"; and the same on p. 297.

W. P. C. Barton in *Elements* (1836), 29, lists only one volume.

Ewan Number 169.

"Some observations concerning the medical properties of the *Pyrola umbellata* and the *Arbutus* [*Arctostaphylos*] *uva-ursi* of Linnaeus. By Professor Benjamin Smith Barton of Philadelphia. Communicated in a letter to B. C. Brodie, Esq. Read Nov. 14, 1815." *Med.-Chir. Soc. Trans.* 7 (1816): 143–149.

Copies: CPSP; Lloyd Libr., has pp. 143–148; RSC; MBG, Ewan.

The letter had been dated "London, August 24, 1815." Brodie had received the paper before Barton left England for Philadelphia, and read it before the Linnaean Society. The printed article dealt chiefly with *Pyrola* [*Chimaphila umbellata*].

This paper had been inspired by Dr. William Somerville's statement in Vol. 5 of the same journal in which he mentions Pursh's "solitary observation" on the diuretic operation of this *Pyrola*. Barton refers to his own *Collections*, ed. 3, and mentions his hope "at some distant period, to communicate...the free result of [his] inquiries concerning the disease and remedies of the Indians of North America," another unfulfilled hope. The Indians used *Pyrola* for rheumatism and fever, a strong decoction exciting "copious persperation."

Ewan Number 170.

1818

"Some account of the *Tantalus Ephouskyca*, a rare American bird. by Benjamin Smith Barton, M.D., F.M.L.S. Read June 6, 1815." *Trans. Linn. Soc. London* 12 (1818): 24–27. 1 plate.

Date of Transmittal to London, "Philadelphia, July 10, 1814." The illustration, according to the printed text was from William Bartram's drawing, the drawing now missing at the Linnaean Society, but the drawing of *Tantalus* reproduced in W. P. C.

Barton's *Medical Botany*, pl. 1 seems more probably by Alexander Rider from a mounted specimen in Peale's Museum.

The edited manuscript at the Linnaean Society is mostly in a clerical hand with minor insertions by Barton. Barton takes the name *ephous*, the Creek Indian name for the bird, to illustrate affinities between American and Asiatic languages. The Limpkin or Crying bird is now *Aramus guarauna* in AOU.

Copy: RSC.

Ewan Number 171.

1821

Some Account of the Siren Lacertina, and other Species of the same Genus of Amphibious Animals. In a letter from Professor Barton of Philadelphia to Mr. John Gottlieb Schneider of Saxony. Philadelphia. Jespar Harding, Printer. 1821.

32 pp.

Copies: APS; BPL; New York Acad. Med.

Sabin, *Dictionary*, 3825.

This also contains Barton's "Note," dated 19 August 1808 that Schneider had not seen the letter "in *Manuscript.*"

Tucher no. 151.

Ewan Number 172.

1823

"Facts, observations, conjectures relative to the generation of the opossum of North America." *Ann. Philos.* ser. 2. 6 (1823): 349–354.

Copy: RSC.

Ewan Number 173.

1824

"Facts...relative to the generation of the opossum of North America." *Not. Natur-Heilk.* 6 (1824): 129–144. pl.

Copy RSC.

Ewan Number 174.

1827

Elements of Botany: or Outlines of the Natural History of Vegetables. Illustrated by forty plates. By Benjamin Smith Barton...3d edition corrected and greatly enlarged. Philadelphia, R. Desilver. 1827. 2 vols.

p. 302, 168, Appendix, 16; Explanation of pls, etc. 40. 39 pl. 8°.

Copies: APS, lacks pl. 37; ANSP; HTML; LC; MBG, has pls. 1–5, 22–23, added title page of ed. 1, dedication dated 1803, privilege on verso, dated 1812, referring to ed. of 1803; NYBG; Univ. Texas Libr.

Sabin, *Dictionary*, 3806 mistakenly gives 1817 as date.

Preface: "The greater number of the plates...engraved from the original drawings of Mr. William Bartram."

Tucher no. 139.

Ewan Number 175.

1836

Elements of Botany, an Outline of the Natural History of Vegetables. Illustrated by forty engravings; by Benjamin Smith Barton, M.D., President of the Linnaean and Medical Societies; one of the Vice Presidents of the American Philosophical Society;

Member of the Imperial Society of Moscow in Russia; and Professor of Materia Medica, Natural History and Botany, in the University of Pennsylvania. A New Edition, revised and condensed, with an Account of the Life and Writings of the author, by William P. C. Barton, M.D. Philadelphia: Robert Desilver, 110 Walnut Street. 1836.

325 pp., copies vary.

Copies: Ewan Coll., rebound, stamp on title page, "Doctor J. P. H. Hiester," 325 pp., pls. frontis., *Sarracenia* by Wm. Bartram, 2-17, 28, 29, 20-29, [30], 31, 32 [bled], 33-36, 38-40. "Plate XXXVII was engraved, but is omitted, being useless in this work" (W.P.C.B., p. 324), biographical sketch of Barton [11]-34 pp.; UC Biol. Libr.; Univ. Texas, Wynd copy, original ownership penciled and erased, a Philadelphia owner, original leather, "Barton's Botany" on spine, a curious mixture of plates, Plate II is the frontispiece, 2 copies of pl. 39 as if proofs; PhP.

TL-2, "ed. 4"; Nissen, *Zool. Buchillustr.*, 83.

W. P. C. Barton "condensed" or left out all poetical quotations from Latin and British classics—they swelled the work and interrupted detail. He omitted tabular views, at end of vol. 2, of antiquated and disused systems of classification and arrangement. He expunged the index "because in such a work the index necessarily becomes too copious for facility of reference." By eliminating paragraphs and "throwing all the references of the volumes into one mass for each plate," he "rendered" pages more continuous.

In the preface W. P. C. Barton wrote of his edition:

"I have not felt freedom either in my feelings of respect for the learning of the author, or in my sense of justice to his views in any way to alter or to modify the details of vegetable physiology and nomenclature, or to intrude any extraneous matters of my own in the form of notes...to change nothing but the disposition of the matter, except in the instance where some diffuseness of style, rendered condensation proper and necessary...The work is therefore the unmutilated and ungarbled work of the late professor Barton, in toto...

"Philadelphia, Nov. 18, 1836."

Tucher no. 140.
Ewan Number 176.

1883

The Willughby Society. Barton's Fragments of the Natural History of Pennsylvania. ed. by Osbert Salvin, M.A. F.R.S. &c. London. MDCCC-LXXXIII. (Publ. no. 9).

vi-xviii, 1-24. 4°.

Copies: UK, Mengel, *Ellis*, 180; HTML in original paper wrapper; British Library; Swedish Acad. Sci.

Pink paper cover of Willughby Society carries the above title.

Willughby t.p.; Salvin's preface; t.p. of London ed., t.p. of Philadelphia 1799, ded. to Linnaean Soc., 1799 ed.; BSB's introduction. A line-for-line resetting of the second state.

"It is to be regretted that [BSB's] want of liesure...prevented him from publishing at greater length...for the present work shows that its author was a man of no ordinary observation and intelligence...This reprint has been made [from a copy] in Mr. Godman's and my own library, and was formerly in that of the late Vicomte du Bus. Another copy is in the Banksian Library in the British Museum." Salvin, Preface [iii], dated Cambridge, Jan. 1833.

Ewan Number 177.

1900

"Collections for an essay towards a Materia Medica of the United States," *Lloyd Library of Botany, Pharmacy, and Materia Medica. Bull.* 1 (1900) no. 1. Reprint series no. 1.

Copies: Lloyd Libr.; New York Acad. Med.; Ewan Coll., has index to both Parts. *TL-2* lists index only in Pt. 1.

Ewan Number 178.

1938

"Journal of Benjamin Smith Barton on a Visit to Virginia, 1802," edited by W. L. McAtee, *Castanea* 3 (1938): [85]-117.

Incomplete. Sample page of the journal on p. 117.

Ewan Number 179.

1974

Notes on the Animals of North America [1793] *Benjamin Smith Barton.* Edited with an introduction by Keir B. Sterling. New York, Arno Press. 1974.

59 p. plus facsimile of Barton's "Notes on the Animals of North America" [70 p.] 8°.

Copy: Ewan Coll.

The notes prepared for Pennant's *Arctic Zoology*, ed. 2 (London, 1792, 3 vols.) but manuscript sent too late for inclusion.

Ewan Number 180.

Some unaccomplished publications:

"A Memoir on the Partridge of Pennsylvania," from William Bartram's notes. Announced to appear in *Philadelphia Medical and Physical Journal.*

On American languages, "A full discussion on the subject is reserved for my Philosophical and Historical query." *New Views*, "Preliminary Discourse," lvi.

"A small work on Longevity of Learned Men has been in the press for some time & will probably not be completed for two or three months." *PMPJ* 2 (1806): 192.

"Notebooks on Air." Barton papers, Vol. 21, APS.

"Concerning the pernicious effects of the Equisetum hiemale [*sic, hyemale*], or Rough horsetail when eaten by Horses." Read 21 Dec. 1798 and referred for consideration to Seybert and Williams. 18 January 1789, reported for publication, but it seems not to have appeared.

"The function of absorption in certain...Amphibia." No date of delivery is given, but the paper referred to committee for consideration of publication 4 December 1807. On 1 April 1808 consideration was continued, but there is no mention of acceptance.
"A History of America," announced to Wm. Bartram 13 December 1788.

A work on grasses 21 July 1791?; Barton wrote to Bartram: "I am very anxious to have some drawings, done in your best manner, of the fruits of our different species of grasses, and also those varieties which you think interesting. The object is to represent the size and shape of the fruit; in the most accurate manner, to be contrasted with views of some of the European Grasses" (HSP).

To Judge John Davis in Boston, Massachusetts, 15 June 1806, Barton wrote: "I lately received from the Susquehanna a beautiful collection of impressions of ferns in States of different kinds. I intend to give it to the publick (perhaps through the medium of our Philosophical Society) a memoir on these, and similar vestigages that have been found in America. The subject is, undoubtedly, one of the most interesting nature in Natural History" (HSP). There is a drawing of a section of the stem of the fossil Lycopsida, *Lepidodendron* among Barton's papers (APS).

"I am preparing an account of [yellow fever] for the press," Barton to Pennant 11 April 1794. Notes are among his papers. APS.

"My Strictures on Dr. Robertson's History of America," was referred to in *PMPJ* 2 (1806) Pt. 2: 144 n.

"View of my Travels through different parts of the United States," a plan mentioned in *Discourse*, Note P, p. 85. The material would have been taken from his Journals.

"The function of Absorption in certain...Amphibia," was delivered before the American Philosophical Society 4 December 1807, and referred to Newson, Conover, and Wistar for consideration of publication in the *Transactions*. On 1 April 1808 there had been no report. On 15 July the committee was desired to report at the next meeting, but there is no further mention in APS, "Minutes."

In the Preface of *Cullen's Treatise* Barton states: "Perhaps I may live to accomplish a work of greater extent, both on this subject [aliments and diet] and on the subject of medicines properly so called...An outline of my own views in physiology, so far as they are interwoven with the science of materia medica, and with that of natural history and botany, I hope to publish in the course of the ensuing winter, in an extensive *Syllabus* of my lectures, on these three branches of science." His eight-volume manuscript of what he had hoped to publish in 1813 is in the University Library, University of Wisconsin. It has been reported on by Theodore W. Jeffries, "Barton's unpublished Materia Medica," *Pharm. Hist.* 17 (1975) no. 2: 69–71.

In *Archaeologia Americanae* (1814), p. 60, fn., Barton refers to an "Extensive Memoir on the Astronomy of the nations of America in which I have long been engaged, and which I have now nearly completed. October 9th, 1814." He had concluded that the traditions of the Mexicans show that Mexicans are a very ancient people.

Had the Society considered publication? On 1 February 1811 Barton delivered "Facts and Observations concerning the Natural Turnpike supposed to have been the Ancient Southern Margin of Lake Ontario, read by Dr. Barton to be 'ultimately' left with the Society" (APS, "Minutes," 426).

To Governor De Witt Clinton "a work, much of which is printed off, on our 'Indians,' in two vols. octavo." Perhaps among the papers given to Duponceau.

"Palenque" manuscript edited and added to by Barton was sent to Good (who said it had been published, but was not located by Barton, or us), and then to Tilloch of *Philosophical Magazine* in 1813.

"New species of Proteus or Siren" based on one good specimen from John LeConte of Georgia in 1813, did not appear.

"A work to be entitled 'Strictures on the Arrangements of the Materia Medica, adopted by Mr. Darwin in his Zoonomia.'" *Med. Repos.* 1 (1798): 372, mentioned by Barton in *Collections*, 6.

"A comparative view of different theories which have prevailed in medicine, in the present century," Introduction to *Collections*. It was too extensive for his lecture and might have offended some members of his audience!

"On the instincts and manners of all the known families of animals," in his *Studies of Nature*, p. 18.

"An express memoir on the grapes [*Vitis*] of North America, for which I have large materials, is nearly ready for the press...I shall give my reasons for altering the specific names of *all* the known N. American species of the genus. These *new* names are introduced in the present work, and will appear, with descriptions of the plants, in my *Prodromus Florae Pennsylvanicae*, &c., a part of which is already reprinted." *Geographic View*, 18–19, fn.

A new edition of *Fragments* would contain the two species of [?*Sideroxylon*] seen in Bartram's Garden, from Carolina. Botanical Notes no. 1, August 13, 1806. APS.

W. P. C. Barton tells in his *Elements* (1836), 31, that Barton "republished the letter of John Burkhard, to Leibnitz, written in the Latin language. He had written a Latin preface to his republication, which I have perused in manuscript and also in a proof-sheet." Barton, William P. C. Barton wrote, intended to "circulate it with a preface among the botanical students. By inspection of the work which has now fallen into my hands, I find the preface omitted, and the letter appears in its original form without comment." The nephew continues, "at some future and more appropriate occasion [than the obituary he originally delivered] I will explain the history of this remarkable attempt to wrest from Linnaeus, his long accredited claim to originality in the principle of his sexual system." Had Barton himself destroyed his preface?

Johannes Henricus Bur(c)khard (1676–1738) of Wolfenbütel, Germany, had written to the German natural philosopher and mathematician William Godfrey Leibnitz (1646–1716) that the number and arrangement of the stamens and the pistils could be used as the basis of an artificial system of plants. Soon after Barton had received the two volume work of Richard Pulteney (1730–1801), *Historical and Biographical Sketches of the Progress of Botany in England* (London, 1790, 2 vols.), in which Pulteney had detailed the contribution of Linnaeus, Barton reconsidered and abandoned the project.

"Some account of the Mexican animal called Tozan or Tuza," a three-page manuscript intended to be expanded for the Linnean Society of London.

Ever hoping to be the first, or the authority, on a subject, or to add to or correct the misstatements of other authors, Barton announced his intentions for new projects as the occasion arose.

Appendix II

Roster of Barton's Medical Pupils

Pupils who took the M.D. degree, noting the year, and others who from records are known to have been in Barton's classes are listed here. Entry format:

> PUPIL'S NAME (year of birth and/or death) Place of residence at time of registration. Year of receiving M.D. degree and subject of thesis (Austin, *Imprints*, number). Miscellaneous notes or mention in Barton's records; date(s) of letters to Barton. Biographical references.

Rush was preceptor for some pupils who are also known to have been pupils in Barton's classes. Thesis titles are abbreviated; full titles are provided by Austin. "Ded." records that the thesis was dedicated to Barton, either alone or in a group. A few friendships and/or passages from letters that suggest fields of interest are mentioned.

Printed theses were sold or presented to other members of the graduating class and possibly resold by established physicians to those in school. John S. Mitchell owned a copy of Benjamin Schultz's *Dissertation on Phytolacca* (1795, see below). Was it because it had been a gift to him, or that he had a special interest in the topic? Were these occasionally used as ponies for subjects that appeared again years later? How widely were they owned and read?

ABBOTT, ROBERT (? - ?). M.D. 1811. Lectures on materia medica. 1809–1811. UPenn; *General Alumni* 485.

ALDEN, EBENEZER (1788–1881) of Randolph, Massachusetts. M.D. 1812. Degree under Rush (?); student of BSB and Wistar. Bell "Boston," 174; Kelly, *Cyclopedia*; *General Alumni* 485.

ALEXANDER, WILLIAM M. (? - ?) of Virginia. M.D. 1814 on sympathy (*Alumni*, 2). Letter to BSB 2 Nov. 1814.

ANDERSON, EDWARD H. (? - ?) of Frederick Town, Maryland. M.D. 1807. "Former student" in 1807; collection labeled "Anderson. Trichostichum Oct. 12 [180]7" in Muhlenberg Herb. may be his (cf. Mears, "Muhlenberg," 169). Letters to BSB 21 Sept. 1807; 26 Mar., 8 Nov. 1809. *General Alumni* 483.

ARCHER, JOHN (1777–1832) of Virginia? M.D. 1798 on *Cynanche trachealis*, commonly called croup or hives (Austin, *Imprints*, 50). Materia medica class notes 28 Nov. 1792 at UPenn.

ATLEE, EDWIN AUGUSTUS (1776–1852) of Pennsylvania. M.D. 1804 on influence of music (Austin, *Imprints*, 91), Ded. Student of Kuhn, Rush. "Register," 28, 46, 48; Holloway, *Obituaries*; Ruschenberger, *Physicians*, 209.

BALDWIN, WILLIAM (1779–1819) of Chester Co., Pennsylvania. M.D. 1807 on diseases on the ship *Wampoa* (Austin, *Imprints*, 100), Ded. BSB is acknowledged on p. 23:

"his valuable labours, in exciting a spirit of useful enquiry." UPenn; Elliott, *Dictionary*, 22; Meisel, *Bibliography*, 1: 162; *DAB*; Mears, "Muhlenberg," 158.

BARBER, THOMAS (? - ?) of Richmond, Virginia. Son of BSB correspondent, William Barber, letter of 11 Jan. 1809.

BARNES, JULIUS STEELE (1792-1870) of Southington, Connecticut. A.B. Yale 1815; M.D. Yale 1818. Mentioned as "my pupil" by BSB in letter of 15 Nov. 1811 to unidentified addressee (APS). *Proc. Connecticut Med. Soc.* 3 (1871): 492-494, 503 ff.

BARNWELL, WILLIAM (? -post 1836) of Philadelphia. M.D. 1802 on *Physical investigations and deductions, from medical and surgical facts. Relative to the causes, nature, and remedies of the diseases of a warm and vitiated atmosphere, from climate, local situation, or season of the year...* (Philadelphia, 1802), Austin, *Imprints*, 127, 128. Barton wrote on his copy "put into my hands by Dr. Barnwell" and deposited it with the APS. Barton published the essay in his *Philadelphia Medical and Physicial Journal* 1 (1804): 67-72. Barnwell was elected a member of the American Philosophical Society 15 January 1802. The thesis had originally been in a letter to Barton, the result of a conversation the day before, and the professor had deemed it worthy of a degree for this older and experienced physician. Barnwell evidently had travelled widely, possibly as ship's surgeon. As early as 18 December 1785 "Dr. Barnwell of Philadelphia" had read a paper before the Society on "Effects of heat and vitiated air in the production of disease." The "minutes" of the Society record his attending meetings until 1 December 1826. His paper "Attempts to investigate the causes why the winters in North America are colder than the winters in Europe, in the same latitudes: and why the eastern sides of both northern continents are colder than the western," delivered in 1799, was also filed by the Society. His paper on the climate of New Orleans, read 22 December 1817, and its Supplement were deposited in the Archives of the new APS, Historical Commission 7 May 1819. Powell, *Your Dead*, 471, writes of "A new physician [Barnwell], who averred he had much experience with the disorders of warm climates," opposed the practices of Rush, and sided with Barton in the yellow fever controversies of 1793. *Alumni*, 8; *General Alumni*, 491.

BARTON, ROBERT RITTENHOUSE (1792-1853) of Winchester, Virginia. M.D. 1813 on typhus. Nephew of BSB, son of Richard Peters Barton. Letter to BSB 22 March 1814. *Alumni*, 10.

BARTON, WILLIAM PAUL CRILLON (1786-1856) of Lancaster, Pennsylvania. M.D. 1808 on effects of nitrous oxide (Austin, *Imprints*, 144), Ded. Letters to BSB 3 Aug. 1809, 6 Feb., 7 May, 27 June 1810. Holloway, *Obituaries*; F. L. Pleadwell, on WPCB as Surgeon, U.S. Navy pioneer, *Ann. Med. Hist.* 2 (1919): 267-301. illustrated, portrait; Mears, "Muhlenberg," 159; Harshberger, *Botanists*, 159-163; *ACAB*; *DAB*; Kelly, *Cyclopedia*.

BARTRAM, JAMES HOWELL (1783-1818) of Kingsessing, Pennsylvania. No degree. Also in Rush's class in 1802 ("Register," 60). Sixth and youngest son of John Bartram, Jr., sailed on *George Washington* as ship's surgeon in 1804, to Cape of Good Hope and East Indies; returned from Calcutta in 1805. The following reference to "Bartram's sticking plaister" (misread as "Barton's" by V. Bassett in *Georgia Hist. Quart.* 22 (1938): 352) possibly refers to James H. Bartram, who may have learned of it on his voyage: Edwin Leroy McCall, Philadelphia, 10 Feb. 1806, to Lemuel Kollock, "I send you herewith four pounds of Bartram's sticking plaister. It is true, he makes the best sticking plaster in the city, as you heard, and as it is very much his interest to keep the composition or mode of preparing it a secret, you will not be surprised when I tell you that he will not communicate either the one or the other." (Kollock

papers 469: 23. Georgia Hist. Soc.). James Glen wrote from Philadelphia, 26 Oct. 1809, to Kollock that he would convey 2 lbs. of Bartram's adhesive plaister: cost 2 dollars. (Kollock papers 469: 53. Georgia Hist. Soc.). Oval portrait in color 4" 3", gift of Mrs. Mary Bartram Fink to John Bartram Association, Philadelphia.

BENEZET, SAMUEL (? - ?). M.D. 1808. Certificate in the hand of BSB, 8 June 1809: "regularly attended my lectures on Materia Medica and on Botany and that he has graduated as Doctor of Medicine in the University of Pennsylvania." (Gilbert coll. CPSP); "Physician," resident of 79 Pine St. (*Philadelphia Directory* for 1811). *General Alumni,* 484.

BERKELEY, ROBERT (? - ?) of Virginia. M.D. 1800 on *modus operandi* of sedatives (Austin, *Imprints,* 200). BSB's lecture on opium is cited on pp. 24-25 of the thesis.

BETTON, SAMUEL JR. (? -1850). M.D. 1808. Notes on Dr. Barton's lectures, 1803-1804. *General Alumni,* 484.

BIGELOW, JACOB (1786-1879) of Massachusetts. M.D. 1810, no copy of thesis located, but manuscript at UPenn. A.B. Harvard 1806; arrived in Philadelphia 23 Oct. 1809, *teste* W. D. Peck papers, Harvard University; Letter to BSB 12 Oct. 1811. Elliott, *Dictionary,* 30; Meisel, *Bibliography,* 1: 165; *DAB; Trans. Amer. Med. Assoc.* 33 (1882): 524-527, but with wrong birth year; *Colonial Medicine.*

BLOODGOOD, JOSEPH (? - ?) of Albany, New York. M.D. 1806 on *Haemoptysis* (Austin, *Imprints,* 214). In Rush's class of 1805 ("Register," 66).

BOHANNAN, RICHARD LAFON (1790-1855) of Richmond, Virginia. M.D. 1811. Blanton, *19th Century,* 45, says a charter member of Medical Society of Virginia. Letter to BSB, 29 Oct. 1814.

BOWLES, RICHARD C. (? - ?) of Goochland, Virginia. States in letter to BSB, 8 May 1812, that he was a member of the class of 1803-04 and 1805-06.

BOYKIN, SAMUEL (1786-1848) of Georgia. M.D. 1810 on scarletina and *Angina maligna* (*Alumni,* 19). A.B. Univ. Georgia 1806, enrolled Univ. Pennsylvania 1807, a classmate of G. C. Shattuck. Host to Nuttall, May 1847 at Columbus, Georgia. Nuttall named genus *Boykinia* (Saxifragaceae) in 1834. Boykin-Torrey correspondence for years 1835-1847 at NYBG; Graustein, *Nuttall,* passim.

BOZMAN, GEORGE (? - ?) of North Carolina. M.D. 1812. Surname as Bozeman in *Alumni,* 19. Letters to BSB 27 Mar. and 1 June 1812.

BRERETON, JOHN ANDREW (1787-1830) of Maryland. No degree? Rush's pupil in 1806 ("Register"). Surgeon U.S. Navy, 1811. Author of *Florae Columbianae Prodromus* (Washington, D.C., 1830). "Became acquainted with" Rafinesque. Rafinesque, *Life of Travels,* 76. Cordell, *Maryland* 311; Darlington, *Memorials,* 28; Meisel, *Biography,* 3: 543; Holloway, *Obituaries.*

BROCKENBROUGH, AUSTIN, JR. (? - ?) of Virginia. M.D. 1804 a botanico-chemical essay on *Laurus* [sassafras and benzoin][3507] (Austin, *Imprints,* 276), Ded. Son of John Brockenbrough (? -1801); his son William Austin B. (1809-1858) M.D. Univ. Pennsylvania 1831. Holloway, *Obituaries;* Blanton, *19th Century,* 319, 367.

BROWN, RICHARD (? - ?) of Kentucky. M.D. 1807 on physiognomy (Austin, *Imprints,* 291). Letter to BSB 3 Oct. 1807.

3507 [*Sassafras albidum* (Nutt.) Nees was originally described as *Laurus sassafras* L. The Spicewood or *Lindera benzoin* (L.) Blume was also first noted by Linneaus as *Laurus benzoin* L. Both are Lauraceae. IPNI. ITIS.]

BRUSE, EDWARD (? - ?). Assistant to Wistar. Is this Edward Brux of Georgia, M.D. 1813 (*General Alumni*, 486) on deleterious gases? Letter to BSB 20 Aug. [no date].

BRYARLY WAKEMAN (? -1821) of Maryland. M.D. 1805 on *Lupulus communis* [Hops] (Austin, *Imprints*, 302), Ded. Cordell, 337; Holloway, *Obituaries*.

BURWELL, LEWIS (? - ?) of Virginia. M.D. 1805 on *Digitalis purpurea* (Austin, *Imprints*, 370), Ded. inclusively with "medical professors."

CALDWELL, CHARLES (1772-1853) of North Carolina. M.D. 1796 on the sameness of certain children's diseases (Austin, *Imprints*, 385). Holloway, *Obituaries*; W. S. Middleton in *Ann. Med. Hist.* 3 (1921): 156-178, portrait; Meisel, *Bibliography*, 3, and 1: 170; *DAB*; Caldwell, *Autobiography*; Horine, *Caldwell*.

CAMERON, THOMAS NASH (? - ?) of Pittsburgh, Pennsylvania. M.D. 1816. Introduced by letter of J. A. Cameron, Pittsburgh, 20 Oct. 1814, to BSB.

CAMP, JOHN H. (? - ?) of Virginia. M.D. 1804 on the use of mercury in fevers (Austin, *Imprints*, 399), Ded.

CARTER, CHARLES WALKER (? - ?) of Virginia. M.D. 1814 on *Fluor albus*. Letter, Albermarle, Virginia, 8 Jan. 1815 to BSB.

CARTER, ROBERT (? -1804) of Yorktown, Virginia. M.D. 1803 on opium (Austin, *Imprints*, 422). Blanton, *19th Century*, portrait facing 316, 83 and 85, where he is misidentified as having no degree. Letter to BSB 11 Oct. 1803.

CASEY, JOHN A. (? - ?) of Georgia. M.D. 1804. At University of Pennsylvania 1801, 1803-04. Letters, Augusta, Georgia, 1 Feb. 1809 and 1 Sept. 1813 to BSB. *General Alumni*, 487.

CHAMBERS, CAMPBELL (? - ?) of Baltimore, Maryland. Student or patient? Letters to BSB 24 March and 30 May 1807 on gonorrhea and phlogiston.

CHAMPNEYS, BENJAMIN (1774-1814) of Bridgeton, New Jersey. M.D. 1805 on dysentery (Austin, *Imprints*, 441). As surgeon in the U.S. Navy, 1799-1801, he observed dysentery in the West Indies. *Matriculates*, 32.

CHANNING, WALTER (1786-1879) of Boston, Massachusetts. M.D. 1809, no thesis seen. Private pupil of BSB July 1808 to March 1810. Lecture notes Jan. 1809 (BPL). Beginning in 1815 he contributed to *The North-American Review*; his cousin Richard Henry Dana was its founder (*DAB*). Was at Philadelphia when Jacob Bigelow was a pupil; friend of George Cheyne Shattuck and George Hayward in natural history pursuits. Died 21 July 1879 according to *Boston Med. Surg. J.* 105 (1881): 519-520. Letters to BSB 20 March, 29 Sept. 1811. M.D. Harvard 1812. *General Alumni*, 484; *Colonial Medicine*.

CHAPMAN, NATHANIEL (1780-1853) of Virginia. M.D. 1801 on canine state of fever (Austin, *Imprints*, 445). In private practice in Philadelphia before succeeding to BSB's professorship. Materia medica lecture notes 1798-99 at UPenn. Letters to BSB from Edinburgh, 26 Feb. 1803 (PBL), and 5 March 1815 (APS). A pupil also of Rush, he attended BSB's lectures, see his thesis p. 42. Corner, *Two Centuries*, passim; Holloway, *Obituaries*; Carson, *History*, 172 and passim.

CHURCH, JOHN (1774-1809) M.D. 1797 on camphor (Austin, *Imprints*, 464). Fellow pupil with Horsfield. *Alumni*, 32.

CLARKE, GEORGE (? -1822) of Virginia. M.D. 1810. Notes from Rush and BSB lectures 29 Dec. 1809 to 14 Feb. 1810 (NYPL). Holloway, *Obituaries*; Blanton, *19th Century*; *General Alumni*, 485.

CLEAVER, ISAAC (1785–1822) of Philadelphia. M.D. 1805 on cataract (Austin, *Imprints*, 480). Holloway, *Obituaries*; Nuttall, *Genera* xiv; Mears, "Muhlenberg," 161; Darlington, *Baldwin*, passim.

CLOPPER, JOHN (? – ?) of Baltimore. No degree. Introduced by John Crawford, 1811.

COCKE, CHARLES (? – ?) of Virginia. M.D. 1806 on gout and rheumatism (Austin, *Imprints*, 485). Mentions BSB on pp. 12, 36 of thesis.

COCKE, JAMES (1780–1813) of Virginia. M.D. in 1804 on causes of extensive inflammation that attacks wounded cavities (Austin, *Imprints*, 486). Pupil of Astley Cooper at Guy's Hospital, London. Died of fever just before he was scheduled for opening lecture at new College of Medicine of Maryland. Blanton, *19th Century*, 382; Cordell, *Maryland*; Holloway, *Obituaries*. Letter to BSB 8 July 1809.

CONOVER, SAMUEL FORMAN (? –1824) of New Jersey. M.D. 1791 on sleep and dreams (Austin, *Imprints*, 523), Ded., "A small token of my gratitude from your friends."

COOKE, JOHN ESTEN (1783–1853) of Kentucky. M.D. 1805 on inflammatory bilious fever (Austin, *Imprints*, 526), Ded. also to John Esten of Bermuda, his uncle, and Thomas Sim of Virginia. *Portrait Catalog*.

COOPER, SAMUEL (1772–1798) of Philadelphia. M.D. 1787 on uses of *Datura stramonium* (Austin, *Imprints*, 527). Review of thesis in *Med. Repos.* 1: 550–552. He was apprenticed to Rush. Wm. Darlington, *Florula Cestrica* (West Chester, Pa., 1826), 25, refers to the thesis. Butterfield, *Rush*, fn., 805.

CUNNINGHAM, ROBERT M. (? – ?) of Lancaster Co., Pennsylvania. M.D. 1806 on bilious fever (Austin, *Imprints*, 592). *Portrait Catalog*.

CUSHING, EZEKIEL D. (? – ?) of Plymouth, Massachusetts. Registered as pupil in 1810. *Colonial Medicine*, 182.

CUSTIS, PETER C. (1781–1842) of Virginia. M.D. 1807 on bilious fever of Albermarle Co., Virginia. Letter to BSB from Natchitoches, Louisiana, 1 June 1806, annotated by BSB "Received August 4, 1806," published in *PMPJ* 2 (1806, Sept. 26) Pt. 2: 43–50 as "Observations relative to the Geography, Natural History &c. of the Country along the Red river, in Louisiana..." with a folding chart of "Meteorological Observations, made on the Red River, in the year 1806," opposite p. 50. He named a new squirrel, *Sciurus ludovicianus*, "until we know if it be a new species." Letters also from Drummond Town, Virginia, 21 May 1807; and Newbern, North Carolina, 29 Oct. 1808. *J. Arnold Arbor.* 48 (1967): 437; Flores, *Custis*, and "Ecology."

DAINGERFIELD, HENRY POWEN (? – ?) of Fredericksburg, Virginia. M.D. 1805 on cutaneous absorption (Austin, *Imprints*, 613), Ded. also to W. A. Daingerfield of Alexandria, Virginia.

DARLINGTON, WILLIAM (1782–1863) of Dilworthtown, Pennsylvania. M.D. 1804 on mutual influence of habits and disease (Austin, *Imprints*, 615). His favorite son, Benjamin Smith Barton Darlington, died at 32 of an African disease. Lecture notes from BSB's natural history class at University of Kansas. Letters to BSB, 12 Nov. 1804, Sept. 1806, and 17 Dec. 1807. Stuckey "Darlington's contacts"; Elliott, *Dictionary*, 72; Lansing, *Darlington*; Meisel, *Bibliography*, 1: 177; Harshberger, *Botanists*; Holloway, *Obituaries*; *DAB*; *DSB*.

DAVY, _____ (? – ?) Probably no degree. Letter BSB to W. Roxburgh, April 1810, suggests he sailed as ship's surgeon to Calcutta.

DEBRETTON, FREDERIC (Baron) (? - ?) of St. Croix, West Indies. No degree. Mentioned in a note verso of letter from W. S. Jacobs 27 July 1811 to BSB as enrolled in BSB's class of 1811 by payment of $100.

DEBRETTON, JOHN BALTHASAR (Baron) (? - ?). M.D. 1807 on menstruation. Attended Rush's 1805 class. Letter from his father, S. Debretton, St. Croix, 16 Oct. 1804 to BSB.

DE LA MOTTA, JACOB (1789-1845) of Charleston, South Carolina. M.D. on Indian physic, *Spiraea trifoliata.*[3508] Mentions BSB's lecture, p. 21 of thesis. Refers to botanical books in BSB's library, and to his collections. See Austin, *Imprints*, 646 for 1820 publication. Waring, *South Carolina*, 208-211.

DEWEES, WILLIAM POTTS (1767-1841) of Philadelphia. M.B. 1789; M.D. 1806 on lessening pain in parturition (Austin, *Imprints*, 663), Ded. Grandson of founder of Pottstown; published on midwifery in *Med. Mus.* 1 (1805): 270. Author of *A Compedious System of Midwifery...* (Philadelphia, 1824) and eleven later printings. Kelly, *Cyclopedia*, portrait; Halloway; *Amer. J. Med. Sci.* n. ser. 2 (1841): 256; *DAB.*

DEXTER, GEORGE B. (? - ?) Printed cards for admission, Nov. 1811, Materia Medica, and Nov. 1813, Theory and Practice of Medicine (Carson collection 3: 13 and 21, CPSP).

DOWNEY, WILLIAM (? - ?) of Maryland. M.D. 1803 on properties of *Sanguinaria canadensis* (Austin, *Imprints*, 693). BSB cited on pp. 24-25 of thesis. Wm. Bartram frontispiece, the drawing also used in *Elements* (1803). Thesis reprinted as *Lloyd Library Bull.* no. 9. reprod. ser. no. 5 (1907).

DRAKE, DANIEL (1785-1852) of Cincinnati, Ohio. In class of 1805, M.D. 1816. Letter to BSB 26 Sept. 1814. Elliot, *Dictionary*; Meisel, *Bibliography*, 1: 179; Juettner, *Drake*; Horine, *Drake*; Flexner, *Doctors,* 165-234; Dunlop, *Doctors*, 38-50; Gross, *Lives*, 618; Shapiro & Miller, *Drake*, xiv-xvii; Stuckey, "Darlington's contacts," 219-220; *DAB*; Kelly, *Cyclopedia.*

DRAYTON, CHARLES (? -1844) of South Carolina. M.D. 1809 on aspects of the uterus (Austin, *Imprints*, 699). Is he the son of John Drayton (1766-1822), who wrote BSB 9 Sept. 1803 and 26 July 1804? Holloway, *Obituaries.*

DUDLEY, BENJAMIN WINSLOW (1785-1870) of Lexington, Kentucky. M.D. 1806 on medical topography of Lexington (Austin, *Imprints*, 703), Ded. Member of Royal College of Physicians, London, 1814. Letter to BSB 21 Feb. 1809. Drake, *Dictionary.*

DUVALL, GRAFTON (1780-1841) of Maryland. M.D. 1802 on *Melia azederach* (Austin, *Imprints*, 707), Ded. Letter to BSB 10 Aug. 1812. *Bull. Hist. Med.* (1904): 231; Holloway, *Obituaries*; Cordell, *Maryland*, 387. Mitchill, "Discourse," 210.

ELMER, WILLIAM (1788-1836). Lecture notes taken in Barton's class 17 April and no. 13 on 15 May 1809, "difference between animals & pls. etc.," sketchy. Added to the 28 pages were botanical names of plants in Darlington's hand. Not in Austin. NLM.

EVERETT, CHARLES (? -post 1823) of Lancaster Court House, Virginia. M.D. 1795 on menstruation (Austin, *Imprints*, 738). Letter to BSB 27 June [1796?]. Blanton, *19th Century*, 134.

[3508] [Now known as *Porteranthus trifoliatus* (L.) Britton. IPNI.]

FIELD, ANDREW (? - ?) of Virginia. M.D. 1814 on cutaneous absorption. Letters to BSB, 5 Feb. 1815.

FFITT, STEBBINS (? - ?) of Charleston, South Carolina. No degree. Owed BSB for tickets received 17 July 1813.

FLOYD, JOHN (1783–1837) of Virginia. M.D. 1806 on medical properties of *Magnolia tripetala* and *M. acuminata* (Austin, *Imprints*, 779), Ded. Letters to BSB. [6 Dec.] 1808, 2 Mar. 1812. Blanton, *19th Century*, 132; *DAB*.

FOISSIN, PETER (? - ?) of South Carolina. M.D. 1802 on *modus operandi* of stimuli upon the human body (Austin, *Imprints*, 780). Introduced to BSB by E. D. Smith of Charleston in letter of 3 Oct. 1801. *General Alumni*, 483.

FORBES, THOMAS (? - ?) of Boston. No degree? Bell, "Boston," 183; not in Holloway, *Obituaries*.

FOSTER, ANDREW (? -1831) of Cambridge, Massachusetts. M.D. 1812. Introduced by letter, Bigelow to BSB, 12 Oct. 1816, "for additional advantages." Bell, "Boston," 183; *General Alumni*, 486; *Colonial Medicine*.

FOSTER, STRICKLAND (? - ?) of Bristol, Pennsylvania. Degree? Letter to BSB 29 Feb. 1812 says he has been practicing.

FOSTER, THOMAS (? - ?) of Boston. M.D. 1812. Mentioned in Jacob Bigelow letter to BSB 12 Oct. 1811 as having had medical instructions, and coming to Philadelphia for "additional advantages." *General Alumni*, 486.

FREEMAN, JAMES PHILLIPS (? -1819). A.B. 1816, M.D. 1819. Notes on Barton's lectures on practice of physic 1800. UPenn; *General Alumni*, 14, for College record.

GEDDY, JOHN C. (? - ?) of Richmond, Virginia. M.D. 1802 on absorption of medicines (Austin, *Imprints*, 815), Ded.: "tribute to pre-eminent literary and professional merit." BSB cited on pp. 23, 29 of thesis.

GIGUILLIAT, CHARLES (? -1821) of Savannah, Georgia. M.D. 1813 on combustion (*Alumni*). Died in Cuba, 21 June 1821. Letter to BSB 23 Nov. 1813.

GLOVER, JOSEPH (1778–1840) of Charleston, South Carolina. M.D. 1800 on digestion (Austin, *Imprints*, 823), Ded. Six letters to BSB 1806–1814 have been preserved at APS. Waring, *South Carolina*, 237–240, portrait, et passim.

GOUGH, JOHN PARKER (? -1829) of Charleston, South Carolina. M.D. 1800 on Cantharides (Austin, *Imprints*, 829), Ded. Mentions BSB on pp. 18, 29, 41 of thesis. Letter to BSB 30 July 1811. Waring, *South Carolina*, 240 ("dies in 1819") et passim.

GRAY, HENRY M. (? - ?) of Virginia. M.D. 1805 on croup due to "*Cynanche trachealis*" (Austin, *Imprints*, 833), Ded. Perhaps the "Dr. Gray of Southampton, Va." whose plants are in BSB herbarium, cf. *Bartonia* 9 (1926): 35, where he is unidentified. Fernald, *Rhodora* 43 (1941): 492, says that Edwin Gray was "host of Frederick Pursh" but more likely that was Henry's brother Thomas Gray of Southampton, whom Pursh visited in 1806. Letter from T. Gray to BSB 2 April 1805. Letter to BSB 8 April 1807.

GREGG, AMOS, Jr. (? - ?) of Bristol, Pennsylvania. M.D. ca. 1803? but no record. BSB refers to him as "Dr. Gregg," cf. *Bartonia* 9 (1926): 35, where he is unidentified. He published on Bristol epidemics and weather in *PMPJ* 1 (1804): 15–22, and on *Prinos*

verticillatus[3509] in *PMPJ* 1 (1805) Pt. 2: 100. Nine letters to BSB, 23 Dec. 1803 to 16 Oct. 1807, and herbarium specimens.

GRIER, RICHARD (? - 1808) of Salem, Massachusetts. Manuscript lectures on materia medica by Barton 1806-1807, CPSP "b" 106-60.

GRIMES, JOHN (1781-1816) of Georgia. No degree. At University of Pennsylvania 1799-1800, 1801-1803, *Georgia Hist. Quart.* 22 (1938): 345. Assisted Thomas Walmsley with his thesis. Letters to BSB from Savannah, 18 July 1804, 23 Sept. 1811, and 18 Mar. 1814.

HALL, RICHARD WILMOTT (1785-1847) of Maryland. M.D. 1806 on use of electricity in medicine (Austin, *Imprints*, 854). BSB's lecture mentioned on p. 19 of thesis. Cordell, *Maryland*, 423; Holloway, *Obituaries*.

HAMILTON, THOMAS (? - ?) No record of thesis, but manuscript notes for about 1810 are at UPenn. Is this a son: Thomas Hamilton M.D. 1820 (*General Alumni* 490)?

HANDY, HASTINGS (? - ?) of Maryland. M.D. 1791 on opium (Austin, *Imprints*, 875), Ded.: BSB and Rush with "respect-gratitude-and affection, of their sincere friend." Relative of William Handy (1766-1828)? see *Portrait Catalog*. Not listed in *General Alumni*.

HARDAWAY, DANIEL (? - ?) of Amelia Co., Virginia. No degree. In class of Nov. 1804-1805; materia medica notes, 99 pp. are at Hunt Institute for Botanical Documentation.

HAYWARD, GEORGE (1791-1863) of Boston, Massachusetts. M.D. 1812 (*General Alumni*, 486). First to do major surgery with ether. Diaries and catalog of his books in *Countway Library DAB*. He destroyed his papers. Letter to BSB, Boston, 10 Sept. 1814 about his European trip. Meisel, *Bibliography*, 1: 193; Bell, "Boston," passim; Gifford, *Early America*, 42; Austin, *Imprints*, 893 for his 1818 commentary on Rush's "diseases of the mind"; Holloway, *Obituaries*; *Portrait Catalog*; Kelly, *Cyclopedia*; *Colonial Medicine*.

HODGE, BENJAMIN C. (? - ?) of West Indies. M.D. 1801 on absorption of medicine into the circulation (Austin, *Imprints*, 918), Ded. Honorary member Philadelphia Medical and Chemical Society.

HOLLAND, NATHANIEL LITTLETON (? - ?) of Virginia. M.D. 1815 on apoplexy (Austin, *Imprints*, 924). Ded. with "friendship, gratitude, and esteem."

HOLMES, ROBERT (? - ?) of Virginia. M.D. 1803 on *Bignonia catalpa* (Austin, *Imprints*, 926). Catesby cited, but not BSB.

HORSFIELD, THOMAS (1773-1859) of Maryland. M.D. 1798 on experiments using *Rhus* (Austin, *Imprints*, 951). Cites BSB on pp. 21-23, 34, 37, 39; cites Hughes, *Barbadoes* (1750). In Rush's class of 1793-1794, 1794-1795 ("Register," ff. 45, 47). Wrote "An account of a voyage to Batavia, in the year 1800," *Philadelphia Med. Mus.* 1 (1805): 75-82. Letter to Barton. Peter Chalmers Mitchell, *Centenary History of the Zoological Society of London* (London, 1929), passim, portrait opposite p. 32; Elliott, *Dictionary*; *J. Soc. Bibliogr. Nat. Hist.* 7 (1975): 274; *DNB*; *DAB*.

HOSACK, DAVID (1769-1835) of New York. M.D. 1791 on *Cholera morbus* under Kuhn. On Rush's class roll 1790-1791 ("Register," f. 41). Asked Sully to paint Rush's portrait (Rush Papers 27: 72, at HSP). No record in *General Alumni*. Offered

[3509] [Now *Ilex verticillata* A. Gray.]

hospitality to Barton, ill on his return from Europe in 1815. Undated letter to BSB. Meisel, *Bibliography*, 1: 196; Holloway, *Obituaries*; *DAB*; Robbins, *Hosack*, 21-22, 27-28.

HOSKINS, JOHN (? -ca. 1810) of Virginia. M.D. 1804 on dysentery (Austin, *Imprints*, 982), Ded. Letter to BSB 28 Oct. 1816. Blanton, *19th Century*, 319, refers to Surgeon John Hoskins in the War of 1812.

HOWARD, WILLIAM (? - ?) of Virginia. M.D. 1805 on hydropic state of fever (Austin, *Imprints*, 985). Mentions BSB's view that squill is the best diuretic in whole materia medica. Not to be confused with William Howard (1793-1834) M.D. 1817, University of Maryland, see *Ann. Med. Hist.* ser. 3. 2 (1940): 127, portrait. Not in Austin.

HUTCHINSON, JAMES (? - ?) of Philadelphia, Pennsylvania. M.D. 1803 on conversion of chyle into blood (Austin, *Imprints*, 1010), Ded. in group of 19. Son of James Hutchinson (1752-1793), M.B. 1774, predecessor of BSB in Chair of Materia Medica, 1789-1791, then Prof. of Chemistry; Holloway; *Obituaries*; Powell, *Your Dead*; Butterfield, *Rush*; Morton & Woodbury, *Hospital*; *DAB*.

IVES, ELI (1779-1861) of New Haven, Connecticut. A.B. Yale 1799; student of Rush, Wistar, and BSB 1801- ? ("Register," f. 58); A.M. Yale 1811; honorary M.D. 1811 Connecticut State Medical Society. See *Proc. Connecticut State Med. Soc.* 1: 67 and appendix 2: 311-320; *Yale J. Biol. Med.* 4 (1932) 649-663, portrait, bibliography; Meisel, *Bibliography*, 1: 198; Fulton & Thompson, *Silliman*, passim; *DAB*.

JACKSON, HENRY (1778-1840) of Savannah, Georgia. M.D. 1802 on efficacy of certain external applications (Austin, *Imprints*, 1033), Ded. In class of 1801 ("Register," f. 51); associate of John Brickell, M.D.

JACKSON, SAMUEL (1787-1872) of Philadelphia. M.D. 1808 on suspended animation (Austin, *Imprints*, 1041). Later associated with Gerard Troost (1776-1850), M.D. 1801, Leyden, who had established a chemical and pharmaceutical laboratory in Philadelphia in 1811. Brother (?) of James Jackson (1777-1867), elected to Philadelphia Linnaean Society 1 June 1809 (*Countway Library*). Carson, "Collection," 3: 24, CPSP; Holloway, *Obituaries*; *Ann. Med. Hist.* n.s. 7 (1935): 538-549, portrait; *DAB*.

JACOBS, WILLIAM STEPHEN (? - ?) of Brabant, Belgium. M.D. 1801 on urinary and intestinal calculi (Austin, *Imprints*, 1043). BSB supplied the calculi. Letter to BSB from St. Croix, 27 July 1811.

JOHNSTON, JAMES CHEW (1787-1864) of Louisville, Kentucky. M.D. 1810 on nourishment of the foetus (*Alumni*, 95). Sent some plant collections to BSB in 1810, which evidently have not survived. Letter to BSB 16 Sept. 1810. E. H. Conner, *Bull. Jefferson Co. Med. Soc.* 13 no. 3 (1965): 19; no. 8 (1967): 36-37; Ewan, "Barton's influence," 35.

JOSSLYN, CHARLES (? - ?) of Oxford, New York. In BSB and Rush classes of 1806. Letter to BSB from Oxford, New York, 9 Nov. 1807 on zoological topics.

KEEGAN, THOMAS GILGIN (? - ?) of Maine. M.D. 1809 on biliary calculi (*Alumni*, 98); *Colonial Medicine*, 182.

KING, JAMES (? - ?) of Montgomery Co., Virginia. In class of 1811-12; no degree. Signed contract as private pupil of BSB 14 May 1811.

KIRTLAND, JARED POTTER (1793-10 Dec. 1877) of Connecticut. Private pupil of Eli Ives for botany, Benjamin Silliman for geology, cf. *New England J. Med.* 287 (1972):

909-911; M.D. Yale 1815 under Dr. Nathan Smith. Spent 1814-1815 at University of Pennsylvania, thesis "Our indigenous vegetable materia medica" ("Register," f. 112). Edward Palmer (1821-1911) was influenced by him (R. McVaugh, *Edward Palmer* (Norman, 1956), 9. Geo. M. Curtis, *Ohio State Med. J.* 37 (1941): 971-977. Elliott, *Dictionary*, 147; Holloway, *Obituaries*; Meisel, *Bibliography*, 1: 201; *DAB*.

KNOX, THOMAS (? - ?) of Virginia, "On the Beverley" River, near Stevensburgh. In Rush's class of 1798 ("Register," f. 52). Mentioned in BSB's journal of trip to Monticello as "Dr." and "my former pupil and friend." Is this Thomas F. Knox in Blanton, *19th Century*, 320, Surgeon's Mate in the War of 1812?

KUGLER, BENJAMIN (? - ?) of Philadelphia. M.D. 1810. Zoology committee, Philadelphia Linnaean Society. Philadelphia City Directory 1811: residence southwest corner Race and Fourth Sts.

LATROBE, HENRY S. BENJAMIN (d. 1817). Graduate of St. Mary's College, Baltimore, engineer, died in New Orleans of yellow fever. Mentioned in letter of 5 January 1807 from Benjamin Henry Latrobe to Christian I. Latrobe as being a pupil of Barton's.

LINCOLN, BENJAMIN (? -1813) of Boston. M.D. 1812. Not Benjamin Lincoln (1802-1835), cf. Holloway, *Obituaries*, 272. Bell, "Boston," 183; *General Alumni* 486; *Colonial Medicine* 160, 183.

MacBRIDE, JAMES (1784-1817) of South Carolina. No degree. In materia medica class in 1809; Rush class roll for 1807 ("Register," f. 73). T. G. Prioleau wrote BSB from Charleston, 11 June 1808 that MacBride had "received an handsome establishment [in medicine?] about forty miles above the City [Pineville]...and in a short time of making an elegant independency." Darlington, *Baldwin*, 146, 193, 341; dedicatee of vol. 2, Stephen Elliott, *Sketch of Botany of South-Carolina and Georgia* (Charleston, S.C., 1821-1824, 2 vols., facsimile, Joseph Ewan, ed., New York, 1971); Meisel, *Bibliography*, 1: 208; Waring, *South Carolina*, 264-265.

McCALL, EDWIN LEROY (1783?-1808) of Georgia. M.D. 1806 on mutual subservience of different parts of the body (Austin, *Imprints*, 1167); *Alumni*, 112. On Rush's class roll 1805-1806 ("Register," f. 67). Letters to Lemuel Kollock in *Georgia Hist. Quart.* 22 (1938): 331-368, mention "Bartram's sticking plaster," or "adhesive plaster"; Waring, *South Carolina*, 392.

McMURTRIE, HENRY (1793-1865) of Philadelphia. M.D. 1814. Professor of anatomy and philosophy at Central High School, Philadelphia, author of *Sketches of Louisville, and its environs; including a Florula Louisvillensis, or a catalogue of nearly 400 genera and 600 species of plants...* (Louisville, 1819; reprint, Louisville, 1969), which C. W. Short discredited in *Transylvania J. Med. & Assoc. Sci.* 9 (1836): 345-346. Also author of *Lexicon Scientiarum* (Philadelphia, 1847; ed. 2, 1849). Letter to BSB 17 Feb. 1815. Drake, *Dictionary*, 558; *ACAB* (1888) 4: 151.

MADISON, JAMES CATESBY (? - ?) of Virginia. M.D. 1805 on medical properties of iron (Austin, *Imprints*, 1182). Son of James Madison (1749-1812), Bishop of Williamsburg. Surgeon's mate in War of 1812. Blanton, *19th Century*, 320.

MARKS, JOHN H. (? - ?). Probably no degree. 3 Nov. 1807, tickets to Barton's materia medica lectures. Class notes.

MARTIN, JAMES (? - ?) of Elizabeth Town, 15 mi. from Pittsburg. Attended lectures in 1796 and 1797. Visited Barton in 1798 for supposed diseased prostate. In letter of 23 Feb. 1805, wrote of prevention of hydrophobia after mad dog attack by the use of chickweed; also tobacco. Barton papers, APS.

MARTIN, WILLIAM (? - ?). M.D. mentioned in a sales catalog for copy of Jacques-Pierre Brissot, *New Travels in the United States...* (London, 1792), as having been owned by him and of his having studied medicine with BSB.

MASSIE, THOMAS (? - ?) of Virginia. M.D. 1803 on properties of *Polygala senega* (Austin, *Imprints*, 1225), Ded. BSB's collections and lectures cited. Surgeon's mate in War of 1812, Blanton, *19th Century*, 319.

MAYO, ROBERT (1784–1864) of Richmond, Virginia. M.D. 1808 on the sensorium (Austin, *Imprints*, 1243), Ded. Brother of Joseph Mayo (1795–1872), attorney, mayor of Richmond for fifteen years? Letters to BSB, 10 May 1803, 22 Dec. 1808. Holloway, *Obituaries*; *Med. Ann. Maryland*, 493; Kelly & Burrage, *Dictionary*, 820–821.

MENDENHALL, JOHN (? -1809) of Georgia. No degree, but student in 1803; at University of Georgia in 1806. See *Georgia Hist. Quart.* 22 (1938): 347.

MEREDITH, WILLIAM T. (? - ?). Diploma issued 17 July 1790, filled in and signed by Rush, Wistar, Barton, et al., parchment with seal. Was it never bestowed? Miscellaneous Manuscript Collection, APS.

METTAUER, JOHN PERER (1787–1875) of Virginia. M.D. 1809 on disease. Favorite of Rush, Shippen, Wistar, and Physick. Blanton, *19th Century*, 35–37, portrait; clippings at CPSP. One of his thirteen children, by four wives, Dr. Archer Mettauer, was interested in botany. Letter to BSB 31 July 1809 expresses grateful acknowledgement. Holloway, *Obituaries*; *DAB*; Kelly, *Cyclopedia*, portrait, 2: opposite 164; "Register," f. 75; *Alumni*, 123.

MITCHELL, JOHN STEVENSON (? - ?) of Pennsylvania. M.D. 1803 on *Arbutus* [*Arctostaphylos*] *uva-ursi*, *Pyrola umbellata* and *P. maculata* [both *Chimaphila*] (Fig. 23). Austin, *Imprints*, 1315; "Register" f. 60, in class of 1802.

MITCHELL, THOMAS DUCHÉ (1791–1865) of Cincinnati, Ohio. M.D. 1812 on medical chemistry. In BSB's class of 1809–1810 in materia medica, admission card dated No. 7, 1809 (Carson, "Collection," 3: 19, CPSP). See Austin, *Imprints*, 1316, for *Medical Chemistry...* ([n.p.], 1819). Holloway, *Obituaries*; *General Alumni*, 486; *DAB*.

MOORE, JOHN (1778–1836) of Philadelphia. M.D. 1800 on *Digitalis purpurea* (Austin, *Imprints*, 1331). Gifford, *Early America*, 141; Holloway, *Obituaries*.

MORRIS, CHARLES (? - ?) of Virginia. M.D. 1802 on *Prunus virginiana* (Austin, *Imprints*, 1342), Ded. BSB's collections cited, p. 44 of thesis.

MORRIS, WILLIAM THOMAS (? - ?) of "Fredericktown" near Winchester, Virginia. No degree. In Rush's class 1804–05 ("Register," f. 64). He owed BSB money for practice in Sunbury, Pennsylvania. Six letters from Sunbury, Virginia, and Reading, Pennsylvania, 1806–1809.

MUHLENBERG, FREDERIC AUGUSTUS (1795–1867) of Lancaster, Pennsylvania. M.D. 1814, no thesis seen. Son of Rev. Henry Muhlenberg. Darlington, *Baldwin*, 134–135, 176–183, 198; *Med. Surg. Report Philadelphia* 17 (1867): 62; Holloway, *Obituaries*; Harshburger, *Botanists*, 93; Wallace, *Muhlenbergs*, 318–319.

MURDOCK, JONATHAN (? - ?) M.D. 1811. No thesis seen. Materia medica notes, 117 pp. of BSB class of 1802 (UPenn). *General Alumni*, 485.

MUSSEY, REUBEN DIMOND (1780–1866) of Ipswich, Massachusetts. M.D. Dartmouth 1805; M.D. University of Pennsylvania 1809 on absorptive powers of the skin, cf. *PMPJ* Suppl. 3 (May 1809): 288–302; thesis not seen. Published catalog of Ohio Valley Shells, *Natl. Inst. Proc.* 1 (1843): 296–297, during residence in Ohio, cf.

American Malacologists, 136. Kelly, *Cyclopedia* 2: 211; Drake, *Dictionary*; *General Alumni* 484; Holloway, *Obituaries*; *Portrait Catalog*; *Colonial Medicine*, 177–178, 182. *DAB*.

NICE, WILLIAM GEORGE (? - ?) of Virginia. No degree; in class Nov. 1814–Mar. 1815 ("Register," f. 112). Lecture notes, 187, at Countway Med. Libr., Boston. Publication cited in Blanton, *19th Century*, 145.

OLIVER, DANIEL (1787–1842) of Salem, Massachusetts. M.D. 1810 on *Peripneumonia notha*. Letter to BSB from Salem 20 May 1811 commends *Elements*. Meisel, *Bibliography*, 1: 126; *NCAB* 9 (1907): 92–93; *Colonial Medicine*, 182.

PARRISH, JOSEPH (1779–1840) of Philadelphia. M.D. 1805 on influence of the passions (Austin, *Imprints*, 1456). "Ticket" for BSB's class, paid for by Z. Collins 23 April 1803. Undated memorandum to BSB on case of a "disorder" from handling a West Indian wood. *Philadelphia City Directory* 1811: residence at 109 Mulberry. Holloway, *Obituaries*; *DAB*.

PATTERSON, ROBERT MASKELL (1787–1854) of Virginia? M.D. 1808. In London, with Humphry Davy, and Paris. He returned to the U.S. in 1812, professor of natural philosophy and mathematics 1813–1828. BSB mentions "my ingenious friend" in his *Studies of Nature*, 1: 417. His brother D. B. Patterson of Warminister, Virginia, owned a marble quarry; letter to BSB 15 Mar. 1808. Butterfield, *Rush*, 1041. Letter to BSB from Paris, 18 Dec. 1809; undated memorandum to BSB during his trip abroad.

PEALE, RUBENS (1798–1865). 11th child and 5th son of Charles Willson Peale. In 1804 he attended classes in botany (presumably under BSB) and mineralogy (presumably also under BSB). Assisted in lectures on chemistry and medicine (presumably under Wistar), but he was not a degree pupil although urged to be by Wistar. Sellars, *Peale* (1947) 2: 176.

PENDERGRAST, GARRETT ELLIOTT (1766–1850) merchant at Natchez, Mississippi, when he enrolled as pupil. M.D. 1803 on physical and topographical sketch of Mississippi Territory, etc. (Austin, *Imprints*, 1475), Ded. to Wistar, BSB, and Woodhouse. Cited Wm. Dunbar records of 1803. Surgeon in War of 1812. Practiced in Louisville, Kentucky, after 1822. Letter to BSB from Plattsburg, Mississippi, 1 Jan. 1814. C. E. Carter, *Terr. Pap. U.S.* 5 (1937): 263; 9 (1940): 718; Eugene H. Conner, *Bull. Jefferson Co. Med. Soc.* 14 (1966): 29–38; Ewan, "Barton's influence," 30.

PFEIFFER, GEORGE (1769–1804) of Philadelphia. M.D. 1791 on gout (Austin, *Imprints*, 1499), Ded. Obituary in *PMPJ* 1 (1804) Pt. 1: 125. *Poulson's Daily American Advertiser* says he died 6 August.

PICKERING, SAMUEL W. (? –1842). M.D. 1816. Two volumes of lecture notes on materia medica with indices to each in Newberry Library, Chicago. *General Alumni*, 488.

POPE, JOHN HUNTER (? - ?). M.D. 1808 (*General Alumni*, 484). Letter to BSB 21 March 1808, says he may return home due to sickness, pay the medical fees, but will transmit inaugural essay "fairly written" in time for the next commencement in spring of 1809. Undated letter to BSB "Sept. 24," from Washington refers to his successful practice.

PRICE, THOMAS DANDRIDGE (? –17 May 1812) of Virginia. M.D. 1802 on *Magnolia glauca* (Austin, *Imprints*, 1564), Ded. With U.S. Navy.

PRIOLEAU, PHILIP GENDRON (1776–1844) of Charleston, South Carolina. M.D. 1798 on use of nitric acid and oxygenated muriatic acids in medicine (Austin, *Imprints*, 1567). Republished by Caldwell, *Med. Theses*.

PRIOLEAU, THOMAS GRIMBALL (1776–1876) of Charleston, South Carolina. M.D. 1808 on *Aralia spinosa*. Letter to BSB 11 June 1808, "My best to Mrs. Barton...and esteem." Taught obstetrics in Medical College, Charleston. Waring, *South Carolina*, 278.

RANDOLPH, THOMAS JEFFERSON (1792–1875) of Randolph on Roanoke, R., Charlotte Co., Virginia. No degree. Student of natural history in 1807, and in class ending 12 June 1809. Betts & Bear, *Jefferson Letters*, 392; *DAB*.

ROBBINS, EDWARD HUTCHINSON (1792?–1850) of Boston. No degree at University of Pennsylvania; M.D. Harvard 1815. Introduced to BSB by George Hayward, 10 Sept. 1814. Holloway, *Obituaries*; *Trans. Amer. Med. Assoc.* 3 (1851): 462; Bell, "Boston," 183; *Colonial Medicine*, 183.

ROBERTSON, FELIX RANDOLPH (1781–1865) of Nashville, Tennessee. M.D. 1805 on *Chorea sancti viti* (*Alumni*, 153). Author of "Additional Observations on the Falls of Niagara" *PMPJ* 1 (1805) Pt. 2: 61–68. Letters to BSB 19 Mar. 1807, 1 Mar. 1810, 20 Oct. 1810, 26 Sept. 1814, and 8 Oct. 1814. Holloway *Obituaries*; Philip May Hamer, ed., *The Centennial History of the Tennessee State Medical Association 1830–1930* (Nashville, 1930), 32, portrait.

ROEBUCK, JARVIS (? – ?) of St. Croix and Santa Cruz, West Indies. M.D. 1801 on bile of ox, dog, and man (Austin, *Imprints*, 1615), Ded. Letters to BSB 14 Oct. 1804, 25 Jan. 1810, and 20 Dec. 1815.

ROGERS, PATRICK KERR (1776–1828) from Ireland, arrived in Pennsylvania in 1798. M.D. 1802 on properties of *Liriodendron* (Austin, *Imprints*, 1617), Ded. Frontispiece by Turpin. Resident at 205 Mulberry St. according to *Philadelphia City Directory* 1808. Became Prof. Chemistry and Natural Philosophy at William and Mary. Letters to BSB 5 Jan. 1809 and 24 April 1811. Kelly & Burrage, *Dictionary*, 1052–53; J. B[ritten] in *J. Botany* 38 (1900): 231; Emma Savage Rogers, *Life and Letters of William Barton Rogers* (Boston & New York, 1896, 2 vols.), Chapt. I, "Relative of George Rogers, M.D., of Newton-Stewart, Ireland."

ROUSSEAU, JOHN BAPTISTE CLÉMÈNT (? – ?) of Hispaniola. M.D. 1800 on absorption (Austin, *Imprints*, 1626), Ded. to medical faculty; BSB cited on p. 15. "From France" ("Register," f. 55). Residence at 210 Spruce St. in *Philadelphia City Directory 1811*. Letter to BSB 21 June 1811.

RUSH, JAMES (1786–1869) of Philadelphia. M.D. 1809 on use of momentum (Austin, *Imprints*, 1692), Ded. with his father to Wistar, Woodhouse, Physick, and Dorsey. Third son of Benjamin Rush. Butterfield, *Rush*, for numerous references; Elliott, *Dictionary*; Holloway, *Obituaries*; *DAB*.

RUSH, JOHN (1777–1838) of Philadelphia. M.D. 1804 on causes of sudden death (Austin, *Imprints*, 1694). "Jack" or "Jackey," Benjamin Rush's eldest son. Butterfield, *Rush*, for numerous references; Carlson, "Rush and Son."

RUSSELL, THOMAS (1793–1819) of Salem, Massachusetts. M.D. 1814 on acetate of lead. *Alumni*, 157; Graustein, *Nuttall*, 142; T. Nuttall, *A Journal of Travels into the Arkansas Territory during the Year 1819* (Philadelphia, 1821), 141; *Portrait Catalog*; *Colonial Medicine*; Ewan, "Barton's influence," 31.

SCHULTZ, BENJAMIN (1772–1814) of Montgomery Co., Pennsylvania. M.D. 1795 on *Phytolacca decandra* (Austin, *Imprints*, 1746), Ded. also to Wistar. Frontispiece by

Wm. Bartram; refers to Kalm, Cutler, L'Héritier, acknowledging information supplied by BSB. In Rush's class 1792-93 ("Register," f. 44; *Alumni*, 160). Author of a paper "On a botanical mode of discriminating between esculent and noxious vegetables" read before the APS 1 Dec. 1797. On p. 7 of his thesis he labeled his "ingenious friends" Wm. Bartram, Wm. Hamilton, C. Wistar, and B. S. Barton. Although BSB read the paper before the APS, it was rejected for publication (MS No. 14 "Natural History" communications to APS; Meisel, *Bibliography*, 2: 15). The paper did appear *Proc. Amer. Philos. Soc.* 22 (1884): appendix 264; it had been printed by Abel Dickenson (1806). Letter, 3 Mar. 1803 to C. Wistar is among BSB papers. Andrew S. Berky, *An Account of Dr. Benjamin Schultz of Pennsylvania...* (Pennsburg, Pa., 1952), 27 pp. *TL-2*, as "Shultz."

SCOLLAY, SAMUEL (1782-1857) of Virginia. M.D. 1816 on dysentery. After A.M. Harvard 1808, he arrived in Philadelphia as a medical student in Oct. 1814 (*Alumni*, 160). Died at Smithfield, Virginia. Holoway, *Obituaries*.

SCOTT, WILLIAM FRANKLIN (? - ?) of Virginia. M.D. 1803 on counteracting deleterious effects of opium (Austin, *Imprints*, 1713; *Alumni*, 160). Son (?) of John C. Scott of Lunenberg, Virginia, whose letter to W. F. Scott, Halifax, Virginia, 11 July 1812 on Tuckahoe was passed on to BSB. Noticed in Blanton, *19th Century*, 244.

SEIP, FREDERIC (? - ?) of Natchez, Mississippi. M.D. 1800 on cataract (Austin, *Imprints*, 1726). His letter to BSB from Natchez 16 May 1807 mentions Peter Custis and Dr. Towles at Point Coupee. He was Wm. Dunbar's physician. Cantwell, *Wilson*, 301.

SELBY, WILLIAM F. (? - ?) of Maryland. M.D. 1806 on analogy between plants and animals (Austin, *Imprints*, 1727), Ded. not to Barton, but to seven persons including Shippen, Rush, Wistar, Woodhouse, and Physick. His thesis, p. 15, mentions *Dionaea* whose "leaves strangle"!

SEMMES, THOMAS (1778-1833) of Maryland. M.D. 1801 on effects of lead (Austin, *Imprints*, 1730), no thesis seen, but see Austin, *Imprints*, 1735, 1736 for other publications. Settled in Alexandria, "D.C." Kelly, *Cyclopedia*; Holloway, *Obituaries*.

SEWELL, THOMAS (? - ?) of Ipswich, Massachusetts. No degree at University of Pennsylvania, but lecture notes in materia medica, Nov. 1803, 33 pp. in Manuscript Division, LC. Is this Thomas Sewall (1786 Augusta, Maine-1845), M.D. Harvard 1812? Kelly & Burrage, *Dictionary*, 1096; Bell, "Boston," 183; *Colonial Medicine*; Catlett, *Guide* no. 487.

SHATTUCK, GEORGE CHEYNE, Senior (1783-1854) of Massachusetts. M.D. 1807 on *Hydrocephalus internus* (*Alumni*, 163; "Register," f. 72). Five letters to BSB 1809-1814. Not to be confused with his son (1813-1893), who accompanied Audubon to Labrador, cf. Gifford, *Early America*; Kelly, *Cyclopedia*; *Ann. Med. Hist.* ser. 3, 2 (1940): 487. *DAB*; Holloway, *Obituaries*; Kelly, *Cyclopedia*; *PMPJ* 2 (1806) Pt. 2: 110.

SHORT, CHARLES WILKINS (1794-1863) of Kentucky. M.D. 1815 on medical properties of *Juniperus sabina*. In BSB's spring class of 1814 (*Alumni*, 165). Elliott, *Dictionary*; Meisel, *Bibliography*, 1: 229, Holloway, *Obituaries*; Stuckey, "Darlington's contacts," 220-237; *DAB*.

SILLIMAN, BENJAMIN (1779-1864) of Connecticut. A.B. Yale 1796, in BSB's class of 1802; M.D. Bowdoin 1818. Brown, *Silliman*; Elliott, *Dictionary*; Meisel, *Bibliography*, 1: 230; Holloway, *Obituaries*; *Portrait Catalog*; *DAB*; *DSB*.

SMITH, EDWARD DARRELL (1777-1819) of Charleston, South Carolina. M.D. 1800 on circulation (Austin, *Imprints*, 1758), Ded. Many references to classics: Thunberg, *Travels* (London, 1795-96); P. Martyr (1555). He recorded that BSB was purged by

venison after the deer had fed upon *Kalmia latifolia* (p. 50). Letter to BSB 3 Oct. 1801. Waring, *South Carolina*, 315, et passim.

SMITH, JAMES (1771–1841) of Maryland. No degree. Pupil of Rush 1793–94 ("Register," f. 46) and BSB. The "Jenner of America" began vaccination in Baltimore, 1801. He gave BSB a "small box of gunpowder tea" 12 May 1812 (APS). Practiced in Philadelphia 1812, but is not in *Philadelphia City Directory 1811*. Is James Smith M.D. 1810 according to *General Alumni*, 485, the son? Holloway, *Obituaries*; *Portrait Catalog*; Cordell, *Maryland*, 571.

SMITH, THOMAS (? – ?) of St. Croix. M.D. 1805 on wounds of the intestines (Austin, *Imprints*, 1778). Is this the Thomas Smith that Waring, *South Carolina*, 383, listed as practicing in Darlington County in 1814?

SPENCER, OLIVER HATFIELD (? – ?) of New Orleans. M.D. 1803 on digestion (Austin, *Imprints*, 1812), Ded. "of most lively esteem"; cites BSB on p. 27. Duffy, *Louisiana*, passim who gives "C" as middle initial, does not mention his Philadelphia residence.

STEVENSON, COSMO CORDON (1785–1825) of Baltimore, Maryland. M.D. 1803 on gonorrhea (Austin, *Imprints*, 1826), Ded. Practicing in Baltimore in 1807. BSB introduced his nephew Wm. Paul Zantzinger in March 1808. Cordell, *Maryland*, 581.

STONE, ROBERT H. (? – ?). Wrote to Barton, no date, but "½ 2 Tuesday" that he was disappointed to be placed under another preceptor. "Be kind enough to write for me the promised introduction to Dr. Bard" in New York City (APS).

STUART, JOSEPHUS BRADNER (? – ?) of Albany, New York. M.D. 1810 on a defense of cutaneous absorption (Austin, *Imprints*, 1836). Letters to BSB 6 Jan. 1810 and 4 April 1814.

TARLETON, JOHN (? – ?) of Chaptico, St. Marys Co., Maryland. No degree. Letters to BSB 9 April 1808 and 15 Sept. 1812; cannot pay money due.

THOMAS GEORGE G. (? – ?) of Virginia. M.D. of 1802 on *Kalmia latifolia* and *K. angustifolia* (Austin, *Imprints*, 1888), Ded. on p. 60. *Elements* (1803), 2: 47.

THOMPSON, HEDGE (? – ?) of Salem, New Jersey. M.D. 1802 on *Spigelia marilandica* (Austin, *Imprints*, 1896), Ded. He administered "two scruples of powdered *Spigelia* root" to Thomas Walmsley (p. 26 of thesis). In Rush's class of 1801 ("Register," f. 59).

THORNTON, GEORGE ALEXANDER (? – ?) of Virginia. M.D. 1807 on progress of medical science as an agency of the sanative art (Austin, *Imprints*, 1905).

TONGUE, JAMES (? – ?) of Maryland. M.D. 1801 on *Lues venerea* (Austin, *Imprints*, 1916), Ded. "eminently distinguished for his genius and learning."

TUCKER, SAMUEL (? – ?) from St. Thomas, West Indies. M.D. 1806 on medical effects of physical labor (Austin, *Imprints*, 1931). BSB cites Mr. Tucker in a manuscript memorandum of 1 April 1806 on poisonous properties of cashew [*Anacardium occidentale*]. *General Alumni*, 483.

WALKER, JOHN MUNFORD (? – ?) of Virginia. M.D. 1803 on *Cornus florida*, *C. sericea*, and *Cinchona officinalis* (Austin, *Imprints*, 1987), Ded. Wm. Bartram frontispiece of *Cornus florida*. Mentions other premeds.: Massie, Downey, Wilson, Young Gregg, Walmsley, Amos Gregg of Bristol, Pennsylvania; *PMPJ* Suppl. 1 (1806): 85.

WALLACE, JAMES WESTWOOD (1769-1838) of Virginia. M.D. 1793 on catamenia (Austin, *Imprints*, 1989). Medical student at Edinburgh 1791-1792. Bell, "Barton," 201, quotes letter to Rush, 11 March 1811, on BSB's misconduct at Edinburgh University (Rush Manuscripts, XIX, 19, LCP). Died at Warrenton, Virginia. Blanton, *19th Century*, 362.

WALMSLEY, THOMAS (1781-1806) of Pennsylvania. M.D. 1803 on absorption of medicines (Austin, *Imprints*, 1992), Ded. References to BSB on pp. 19-21, 23, 27, 29-30, 34, 40, 69; mentions Thunberg's *Travels* (London, 1795-96). Walmsley contributed on *Tilia americana* to *PMPJ* 1 (1804) Pt. 1: 34-37; and on fireflies, *PMPJ* 1 (1804) Pt. 1: 118-123 (Meisel, *Bibliography*, 2: 108, 110). BSB, obit.: *PMPJ* 2 (1806) Pt. 2: 162-167. Friend of Amos Gregg and J. R. Young (*Bull. Hist. Med.* 38 (1964): 34-37). Letter to BSB 12 Jan. 1805.

WATERHOUSE, JOHN FOTHERGILL (1791-1817) of Boston, Massachusetts. M.D. 1813 on the use of leeches (*Alumni*, 192). Rush's class of 1814 ("Register," f. 109). As a member of the ANSP in 1814 he presented one of the first series of public lectures for ladies (Phillips, "Academy," 269). Meisel, *Bibliography*, 1: 218; Harshberger, *Botanists*, 172-173; *Hist. Cat. Brown Univ. 1764-1894*; *Colonial Medicine*, 183; Butterfield, *Rush*, 1190.

WILSON, DANIEL (? - ?) of Richmond, Virginia. M.D. 1803 on opium (Austin, *Imprints*, 2071). Blanton, *19th Century*, 132.

WILSON, GEORGE (? - ?) No degree. Pupil at least in 1813. Was George Wilson (1814?-1894) M.D. of Dubois, Pennsylvania, related? Letters to BSB, Steubenville, Ohio, 24 August 1807; 14 Dec. 1807; and Smithfield, Virginia, 5 Nov. 1813. Holloway, *Obituaries*.

WISHART, JAMES (? - ?) Student in Barton's class in Theory and Practice of Medicine, 1814-1815.

WOODHOUSE, JAMES (1770-1809) of Philadelphia. M.D. 1792 on chemistry and physical properties of persimmon [*Diospyros*] (Austin, *Imprints*, 2086) Ded. to Rush. Mentions Catesby; Lawson, *Carolina*; Bartram, and Marshall. Undated letter to BSB on University business. Elliott, *Dictionary*; *DAB*.

YOUNG, JOHN RICHARDSON (1782-1804) of Maryland. M.D. 1803 on nutrition and the digestive process (Austin, *Imprints*, 2103), Ded. Mentions BSB lectures on pp. 14, 31, 35 (quotes *Elements*); cites "Peal" on eagles and their drinking habits. Classmate of T. Walmsley. Letter to BSB 29 Mar. 1804. D. G. Bates, *Bull. Hist. Med.* 38 (1964): 226-240; *DAB*; *DSB*.

Appendix III

Genealogy

Editors' Note:

Included here is a genealogical listing of the three main families of this text, demonstrating their interconnectedness. It is a more extensive reflection of the genealogy chart on the inside front and back covers. As first names of the Bartons, Rittenhouses, and Peningtons appear and reappear in the text in sometimes confusing context, identifying numerals precede significant text mentions of the primary figures. Each raised numeral in the text corresponds with the numeral following each name (in bold and parentheses) in the list.

Particularly with the children of Richard Peters Barton and Martha Walker Barton, it is difficult to decide from records whether the middle given name represents a genealogist's attempt to distinguish members of several families, or whether the middle name was truly given by parents. The repetition of the first given name in a family reflects the prevalence of infant mortality, and the carrying on of the memory of the lost infant.

The compiler of any such document faces several problems concerning organization. The entries must be arranged linearly according to some predictable scheme. In this case, they are alphabetized by name, with appropriate cross-references where necessary.

As is the custom, married women are listed under their assumed married name, with a notation of their maiden names. In instances in which women had more than one husband in their lifetimes, separate entries exist for each name.

The multiplicity of names used to indicate the same individual, as well as the frequent re-use of given names within a family—even within the same generation and immediate family group, can at times be confusing when taken out of context. It is recommended that readers consult this section at need. However, if consulted too early and too often, it may let cats out of bags by letting readers know who is about to marry, remarry, die, etc.

V.C. Hollowell
E.P. Duggan
M.R. Crosby

Barton, Benjamin Smith (11) 1766-1815. Son of Thomas Barton (4) and Esther (neé Rittenhouse) Barton (64). Husband of Mary Penington (87). Father of two children, Sarah (50) and Thomas Pennant (51) Barton. Prominent Philadelphia physician and naturalist of the New World, author of numerous books concerning natural history and *materia medica*, including the first botany textbook of the New World. Medical and Botany Professor, and long-standing Vice-President of the American Philosophical Society of Philadelphia, Benjamin Smith Barton is, of course, the subject of our tale.

Barton, Catherine Amelia (59) Dates unknown.

Barton, Charles B. (16) ? - November 1811. Son of William Barton (5) and Elizabeth Rhea.

Barton, Daniel Walker (48) ca. 1801-1863. Son of Richard Peters Barton (10) and Martha Walker.

Barton, David Rittenhouse (12) ? -1818. Son of Thomas Barton (4) and Esther (neé Rittenhouse) Barton (64). Husband of Catherine (Kitty) Graeff (who died in 1826). Father of eight children, Mary (52), Esther Rittenhouse (53), Mary Graeff (54), John Graeff (55), Edmund Hill (56), Edward Hall (57), George Washington (58), and Catherine Amelia (59) Barton.

Barton, David Walker (47) ca. 1801-1863. Son of Richard Peters Barton (10) and Martha Walker.

Barton, Edmund Hill (56) Dates unknown. Son of David Rittenhouse Barton (12) and Catherine (Kitty) Graeff.

Barton, Edward Hall (57) Dates unknown. Son of David Rittenhouse Barton (12) and Catherine (Kitty) Graeff.

Barton, Elizabeth Sophia (19) Dates unknown. Daughter of William Barton (5) and Elizabeth Rhea.

Barton (neé Rittenhouse), Esther (64) 1731-1774. Daughter of Matthias Rittenhouse (62) and Elizabeth Rittenhouse (neé Williams). First wife to Thomas Barton (4). Mother of William (5), Esther (6), Thomas (7), Juliana Susanna (8), Matthias (9), Richard Peters (10), Benjamin Smith (11), and David Rittenhouse (12) Barton.

Barton, Esther (38) Dates unknown. Daughter of Thomas Barton (7) and S. Higginson.

Barton, Esther Rittenhouse (53) Dates unknown. Daughter of David Rittenhouse Barton (12) and Catherine (Kitty) Graeff.

Barton, George (39) Dates unknown. Son of Thomas Barton (7) and S. Higginson.

Barton, George Washington (58) Dates unknown. Son of David Rittenhouse Barton (12) and Catherine (Kitty) Graeff.

Barton, Hetty Ann (18) Dates unknown. Daughter of William Barton (5) and Elizabeth Rhea.

Barton, John (1) 1653-1718. Father of William (3) and Thomas (4) Barton.

Barton, John Graeff (55) Dates unknown. Son of David Rittenhouse Barton (12) and Catherine (Kitty) Graeff.

Barton, John Rhea (14) 1796-1871. Son of William Barton (5) and Elizabeth Rhea. Husband to Ann Frazer, then Susan Ridgway.

Barton, Juliana (40) Dates unknown. Daughter of Thomas Barton (7) and S. Higginson.

Barton, Juliana (49) Dates unknown. Daughter of Richard Peters Barton (10) and Martha Walker.

Barton (neé Penington), Mary (87) 1771-1820. Daughter of Edward Penington (82) and Sarah Shoemaker. Wife of Benjamin Smith Barton (11). Mother of two children, Sarah (50) and Thomas Pennant (51) Barton.

Barton, Mary (52) Dates unknown. Daughter of David Rittenhouse Barton (12) and Catherine (Kitty) Graeff.

Barton, Mary Graeff (54) Dates unknown. Daughter of David Rittenhouse Barton (12) and Catherine (Kitty) Graeff.

Barton, Mary Rhea (17) Dates unknown. Daughter of William Barton (5) and Elizabeth Rhea.

Barton, Matthias (9) 1758–1809. Son of Thomas Barton (4) and Esther (neé Rittenhouse) Barton (64). Husband of Esther Cox.

Barton, Nancy (21) Dates unknown. Daughter of William Barton (5) and Elizabeth Rhea.

Richard Barton (2) 1706–1781. Son of John Barton (1). Father of William Barton (3) and Thomas Barton (4).

Barton, Richard M. (44) ? –1859. Son of Richard Peters Barton (10) and Martha Walker. Died in early childhood.

Barton, Richard Peters (10) ca. 1786–1821. Son of Thomas Barton (4) and Esther (neé Rittenhouse) Barton (64). Husband of Martha Walker. Father of seven children, Robert Rittenhouse (43), Richard W. (44), William Matthias (45), Thomas Walker (46), David Walker (47), Daniel Walker (47), and Juliana (49) Barton.

Barton, Robert Rittenhouse (43) 1792–1858. Son of Richard Peters Barton (10) and Martha Walker.

Barton, Sarah (50) 1799–1817. Daughter of Benjamin Smith Barton (11) and Mary (neé Penington) Barton (87).

Barton, Susanna Juliana (20). Dates unknown. Daughter of William Barton (5) and Elizabeth Rhea.

Barton, Thomas (4) 1730–1780. Son of Richard Barton (2). Husband to Esther Rittenhouse (64), then Sarah de Normandie. Father of William (5), Esther (6), Thomas (7), Juliana Susanna (8), Matthias (9), Richard Peters (10), Benjamin Smith (11), and David Rittenhouse (12) Barton.

Barton, Thomas (7) Dates unknown. Son of Thomas Barton (4) and Esther (neé Rittenhouse) Barton (64). Husband of S. Higginson. Father of Esther (38), George (39), and Juliana (40).

Barton, Thomas Pennant (51) 1803–1969. Son of Benjamin Smith Barton (11) and Mary (neé Penington) Barton (87).

Barton, Thomas W. (15) ? –1818. Son of William Barton (5) and Elizabeth Rhea.

Barton, Thomas Walker (46) 1800–1863. Son of Richard Peters Barton (10) and Martha Walker.

Barton, William (3) Dates unknown. Son of Richard Barton (2).

Barton, William (5) 1754–1817. Eldest son and first child of Thomas Barton (4) and Esther (neé Rittenhouse) Barton. Husband of Elizabeth Rhea (born in 1759). Father of William Paul (Crillon) (13), John Rhea (14), Thomas W. (15), Charles B. (16), Mary Rhea (17), Hetty Ann (18), Elizabeth Sophia (19), Susanna Juliana (20), and Nancy (21) Barton.

Barton, William Paul (Crillon) (13) 1786–1856. Son of William Barton (5) and Elizabeth Rhea. Husband of Esther R. Sergeant (78). Father of thirteen children, Elizabeth, Emma, Julia, Adeline, Harriet, William, Emma, William (name appears to have been reused after the death of the first William), Mary, Lavinia, Clara, William (again the name appears to have been reused), and Charles Crillon Barton.

Barton, William, Matthias (45) Dates unknown. Son of Richard Peters Barton (10) and Martha Walker.

Cloyd (neé Rittenhouse), Mary (72) 1749– ? Daughter of Matthias (62) and Elizabeth Rittenhouse (neé Williams). Wife to Thomas Morgan, then David Cloyd.

Davenport (neé Zantzinger), Sarah Barton (25) 1778-? Daughter of Paul Zantzinger and Esther (neé Barton) Zantzinger (6). Wife of Franklin Davenport.

Evans (neé Rittenhouse), Eleanor (71) ? -ca. 1809. Daughter of Matthias (62) and Elizabeth Rittenhouse (neé Williams). Wife of Daniel Evans. Mother of David, Benjamin, Joseph, Hannah, and Elizabeth Evans.

Johnson (neé Zantzinger), Juliana Elizabeth (27) 1781-1854. Daughter of Paul Zantzinger and Esther (neé Barton) Zantzinger (6). Wife of Robert G. Johnson.

Morgan (neé Rittenhouse), Margaret (68) ? -ca. 1728. Daughter of Matthias (62) and Elizabeth Rittenhouse (neé Williams). Wife to Edward Morgan. Mother of Morgan Morgan.

Morgan (neé Rittenhouse), Mary. *See Cloyd (neé Rittenhouse), Mary*

Penington, Benjamin (84) Dates unknown. Son of Edward Penington (82) and Sarah Penington (neé Shoemaker).

Penington, Edward (82) 1726-1796. Son of Isaac Penington (81) and Ann Biles. Husband to Sarah Penington (neé Shoemaker) (1729-1797). Father of Isaac (83), Anne, Sarah, Mary (87) (who became the wife of Benjamin Smith Barton), Benjamin (84), Edward (85), Sarah, and John (86) Penington.

Penington, Edward (85) 1766-1834. Son of Edward Penington (82) and Sarah Penington (neé Shoemaker). Husband to Helena Penington (neé Holmes).

Penington, Isaac (81) Dates unknown. Husband to Ann Penington (neé Biles). Father of Edward Penington (82).

Penington, Isaac (83) Dates unknown. Son of Edward Penington (82) and Sarah Penington (neé Shoemaker).

Penington, Dr. John (86) ?-1793. Son of Edward Penington (82) and Sarah Penington (neé Shoemaker).

Rittenhouse, Andrew (69) Dates unknown. Son of Matthias (62) and Elizabeth Rittenhouse (neé Williams).

Rittenhouse, Benjamin (67) 1740-1825. Son of Matthias (62) and Elizabeth Rittenhouse (neé Williams). Husband of Ezlath Bull, then Frances Wade. Father of David, John Bull, Benjamin Franklin, Mary, Elizabeth, William, and Emily Rittenhouse.

Rittenhouse, David (65) 1731-1796. Son of Matthias (62) and Elizabeth Rittenhouse (neé Williams). Husband to Eleanor Colston, followed by Hannah Jacobs (who died in 1799). Father of Elizabeth (75) and Esther (76) Rittenhouse.

Rittenhouse, Elizabeth (73) 1749- ? Daughter of Matthias (62) and Elizabeth Rittenhouse (neé Williams).

Rittenhouse, Jonathan (70) Dates unknown. Son of Matthias (62) and Elizabeth Rittenhouse (neé Williams).

Rittenhouse, Matthias (62) 1702-1780. Son of Nicholas (Claus) Rittenhouse (61). Husband to Elizabeth Rittenhouse (neé Williams). Father to David (65), Benjamin (67), Andrew (69), and Jonathan (70) Rittenhouse, as well as Esther Barton (neé Rittenhouse) (64), Annie Shoemaker (neé Rittenhouse) (66), Margaret Morgan (neé Rittenhouse) (68), Eleanor Evans (neé Rittenhouse) (71), Mary Cloyd (neé Rittenhouse) (72), and Elizabeth Rittenhouse (73).

Rittenhouse, Nicholas (Claus) (61) 1674-1742. Son of William Rittenhouse (60). Father of Matthias (62) and William (63) Rittenhouse.

Rittenhouse, William (60) 1644-February 19, 1698. Father of Nicholas (Claus) Rittenhouse (61).

Rittenhouse, William (63) Dates unknown. Son of Nicholas (Claus) Rittenhouse (61).

Sergeant (neé Rittenhouse), Elizabeth (75) 1767–? Daughter of David Rittenhouse (65). Wife of J. D. Sergeant (1746–1795). Mother to Frances (77), Esther (78), and David (79) Sergeant.

Sergeant, David (79) 1791–1871. The only son and second child of J. D. Sergeant (1746–1795) and Elizabeth (neé Rittenhouse) Sergeant (75).

Sergeant, Esther R. (78) 1793–1866. Youngest daughter, and the youngest child, of J. D. Sergeant (1746–1795) and Elizabeth (neé Rittenhouse) Sergeant (75).

Sergeant, Frances (77) 1789–1847. Oldest daughter of J. D. Sergeant (1746–1795) and Elizabeth (neé Rittenhouse) Sergeant (75).

Shoemaker (neé Rittenhouse), Annie (66) 1736–1762. Daughter of Matthias (62) and Elizabeth Rittenhouse (neé Williams). Married George Shoemaker.

Waters (neé Rittenhouse), Esther (76) 1770–1866. Daughter of David Rittenhouse (65). Wife of N. B. Waters, who died in 1794. Mother of David Waters (80).

Waters, David (80) 1791– ? Son of N. B. Waters (who died in 1794) and Esther (neé Rittenhouse) Waters (76).

White (neé Barton), Juliana Susanna (8) ? –1867. Daughter of Thomas Barton (4) and Esther (neé Rittenhouse) Barton (64). Wife of J. M. White (1768–1860). Mother of Esther W. (Hetty) (41) and Elizabeth W. (42) White.

White, Elizabeth W. (42) Dates unknown. Daughter of J. M. White and Juliana Susanna (neé Barton) White (8).

White, Esther W. (Hetty) (41) ? –1809. Daughter of J. M. White and Juliana Susanna (neé Barton) White (8).

Zantzinger (neé Barton), Esther (6) 1756– ? Daughter of Thomas Barton (4) and Esther (neé Rittenhouse) Barton (64). Wife of Paul Zantzinger. Mother of sixteen children, Esther Maria (22), Thomas Barton (23), Mary (24), Sarah Barton (Davenport) (25), Esther Sophia (26), Juliana Elizabeth (Johnson) (27), Harriet Ann (28), Harriet Rennette (29), William Paul (30), Caroline Amelia (31), Henry Richard (32), Henry David (33), Richard Augustus (34), John Paul (35), Caroline Amelia (36) (name appears to have been reused following the death of the first Caroline Amelia...sadly, the new recipient of the name lived for less than a year), and Caroline Catherine (37) Zantzinger.

Zantzinger, Caroline Amelia (31) 1787– ? Daughter of Paul Zantzinger and Esther (neé Barton) Zantzinger (6). Though her exact date of death is unknown, it appears that she died in childhood, as evidenced by the use of the same name for a later sister.

Zantzinger, Caroline Amelia (36) 1795–1795. Daughter of Paul Zantzinger and Esther (neé Barton) Zantzinger (6). Like her namesake Caroline Amelia (31), died in childhood, after less than a year.

Zantzinger, Caroline Catherine (37) 1799– ? Daughter of Paul Zantzinger and Esther (neé Barton) Zantzinger (6).

Zantzinger, Esther Maria (22) 1774–1775. Daughter of Paul Zantzinger and Esther (neé Barton) Zantzinger (6).

Zantzinger, Esther Sophia (26) 1779– ? Daughter of Paul Zantzinger and Esther (neé Barton) Zantzinger (6).

Zantzinger, Harriet Ann (28) 1783–1783. Daughter of Paul Zantzinger and Esther (neé Barton) Zantzinger (6).

Zantzinger, Harriet Rennette (29) 1784–1856. Daughter of Paul Zantzinger and Esther (neé Barton) Zantzinger (6).

Zantzinger, Henry David (33) 1791– ? Son of Paul Zantzinger and Esther (neé Barton) Zantzinger (6).

Zantzinger, Henry Richard (32) 1789- ? Son of Paul Zantzinger and Esther (neé Barton) Zantzinger (6).

Zantzinger, John Paul (35) 1794-1821? Son of Paul Zantzinger and Esther (neé Barton) Zantzinger (6).

Zantzinger, Mary (24) 1777-1821. Daughter of Paul Zantzinger and Esther (neé Barton) Zantzinger (6).

Zantzinger, Richard Augustus (34) 1792- ? Son of Paul Zantzinger and Esther (neé Barton) Zantzinger (6).

Zantzinger, Thomas Barton (23) 1776- ? Son of Paul Zantzinger and Esther (neé Barton) Zantzinger (6).

Zantzinger, William Paul (30) 1786- ? Son of Paul Zantzinger and Esther (neé Barton) Zantzinger (6).

References

Abbreviations, acronyms, and short titles are given here in one listing to simplify the task of finding them. Short titles are used in the text. Titles cited only once or twice may be given in place coupled with their authors' names, which precede the title. Short titles for B.S. Barton are given here with reference to their numbers in Appendix I, Bibliography of Barton's Writings.

AA

Arnold Arboretum, Jamaica Plain, Massachusetts.

Aberbach, *Mitchill*

Aberbach, Alan D. *Samuel Latham Mitchill: a romantic nationalist in the age of Jefferson.* Ph.D. thesis, 1962. Ann Arbor, Michigan, University Microfilms, 1981.

Abraham, *Lettsom*

Abraham, James Johnston. *Lettsom, His Life, Times, Friends and Descendants.* London, Wm. Heinemann, 1933.

ACAB

Appleton's Cyclopedia of American Biography. New York, 1887–1924.

Adler, *Early Herp.*

Adler, Kraig, ed. *Early Herpetological Studies and Surveys in the Eastern United States.* Edited with an introduction by Kraig Adler. New York, Arno Press, 1978.

Alden, "Shakespeare Collection"

Alden, John. "America's First Shakespeare Collection," *Pap. Bibliogr. Soc. America* 58 (1964): 169–173.

Allen, "Edinburgh"

Allen, David E. "James Edward Smith and The Natural History Society of Edinburgh," *J. Soc. Bibliogr. Nat. Hist.* 8 (1978): 483–493.

Allen, "Ornithology"

Allen, Elsa Guerdrum. "History of American ornithology before Audubon," *Trans. Amer. Philos. Soc.* n.s. 41 (1951): 387–591.

Alumni

Catalogue of Alumni of the Medical Department of the University of Pennsylvania, 1765–1877. Philadelphia, 1877.

American Malacologists

Abbott, R. Tucker, ed. *American Malacologists.* Falls Church, Virginia, 1973. *Supplement.* Greenville, Delaware, 1975, continuously paged from first part.

ANI

AnimalBase Project Group. 2005. Early Zoological literature online. http://www.animalbase.uni-goettingen.de/zooweb/servlet/AnimalBase/search#about.

Anonymous, "Bartons 1776."

Anonymous. "The Bartons in Lancaster in 1776," *Pap. Lancaster County Hist. Soc.* 52 (1948): 213–217. Letters copied from a notebook in the possession of Mr. Howard R. Barton, Hamden, Connecticut.

Anonymous, *From Seed to Flower*

Anonymous. *From Seed to Flower, Philadelphia 1681–1876.* Philadelphia, Pennsylvania Horticultural Society, 1976.

ANSP

Academy of Natural Sciences, Philadelphia.

AOU

Checklist of North American Birds...Prepared by the Committee on Classification and Nomenclature of the American Ornithologists' Union, ed. 6. 1983. [For the

Indices – The American Ornithologists' Union. 2005. The A.O.U. Checklist of North American Birds. 7th edition. http://www.aou.org/checklist/index.php3. This list incorporates changes made in the 42nd, 43rd, 44th, and 45th Supplements to the Checklist, as published in *The Auk* 117: 847-858 (2000); 119: 897-906 (2002); 120: 923-932 (2003); 121: 985-995 (2004).]

APS

American Philosophical Society, Philadelphia.

APS *Catalogue*

Catalogue of the Library of the American Philosophical Society. Philadelphia, The Society, 1824.

APS "Minutes"

"Early Proceedings of the American Philosophical Society compiled from the Manuscript Minutes, 1744-1838." *Proc. Amer. Philos. Soc.* 22 (3): 1-875. 1885.

APS *Portraits*

Catalogue of Portraits...in the Possession of the American Philosophical Society. Philadelphia, The Society, 1961.

Audubon & Bachman, *Quadrupeds*

Audubon, John James & Rev. John Bachman. *The Viviparous Quadrupeds of North America.* New York, J. J. Audubon, 1846, 1851. 2 vols.

Austin, *Imprints*

Austin, Robert B. *Early American Medical Imprints, a Guide to Works printed in the United States, 1668-1820.* Washington, D.C., National Library of Medicine, 1961. Cited by number.

Barnhart, "Barton"

Barnhart, John H. "Brief sketches of some collectors of specimens in the Barton Herbarium," *Bartonia* 9 (1926): 35-42.

Barnhart, *Notes*

Barnhart, J. H. *New York Botanical Garden Biographical Notes upon Botanists.* Boston, G. K. Hall & Co. "1965" [1966]. 3 vols.

Barton, *Account of Siren lacetina*

Barton, B. S. *Some Account of the Siren lacertina, and other Species of the same Genus of amphibious Animals.* Philadelphia, 1808. Appendix I, Bibliography of Barton's Writings, no. 139.

Barton, *Additional Facts relative to the Opossum*

Barton, B. S. *Additional Facts, Observations, and Conjectures relative to the Generation of the Opossum in North America.* Philadelphia. 1813. Appendix I, Bibliography of Barton's Writings, no. 163.

Barton, *Archaeologiae Americanae*

Barton, B. S. *Archaeologiae Americanae Telluris Collecteana et Specimina. Or Collections, with specimens, for a series of Memoirs on certain extinct animals and vegetables in North America. Together with Facts and Conjectures relative to the ancient condition of the lands and waters of the Continent.* Philadelphia. 1814. Appendix I, Bibliography of Barton's Writings, no. 166.

Barton, "Barton"

Barton, William P. C. "A Biographical Sketch of Professor Barton" pp. [11]-34 in Benjamin Smith Barton, *Elements of Botany,* new ed. by Wm. P. C. Barton. Philadelphia, Robert Desilver, 1836.

Barton, *Bronchocele*

Barton, B. S. *Memoria sobre a Bronchocele ou Papo da America Septentrional.* Lisbon, 1801. Appendix I, Bibliography of Barton's Writings, no. 42.

Barton, *Collections*

Barton, B. S. *Collections for an Essay towards a Materia Medica of the United States.* Philadelphia, 1798. [Part I, ed. 1]. Appendix I, Bibliography of Barton's Writings, no. 26.

Barton, *Collections*, ed. 1, part 2
Barton, B. S. *Collections for an Essay towards a Materia Medica of the United States...Part Second.* Philadelphia, 1804. Appendix I, Bibliography of Barton's Writings, no. 56.

Barton, *Collections*, ed. 2, part 1
Barton, B. S. *Collections for an Essay towards a Materia Medica of the United States...Part First. The Second Edition.* Philadelphia, 1801. Appendix I, Bibliography of Barton's Writings, no. 41.

Barton, *Collections*, ed. 3
Barton, B. S. *Collections for an essay towards a Materia Medica of the United States...Part First. The Third Edition.* Philadelphia, 1810. Appendix I, Bibliography of Barton's Writings, no. 150.

Barton, *Crotalus*
Barton, B. S. "An account of the most effectual means of preventing the deleterious consequences of the bite of Crotalus Horridus, or Rattle-Snake." *Trans. Amer. Philos. Soc.* 3 (1793): 100–115. Appendix I, Bibliography of Barton's Writings, no. 19.

Barton, *Cullen's Treatise*
Barton, B. S. *Professor Cullen's Treatise of the Materia Medica...In Two Volumes.* Philadelphia, 1812. Appendix I, Bibliography of Barton's Writings, no. 158.

Barton, *Discourse*
Barton, B. S. A *Discourse on some of the principal Desiderata in Natural History, and on the best Means of promoting the Study of this Science in the United States.* Philadelphia, 1807. Appendix I, Bibliography of Barton's Writings, no. 133.

Barton, *Elements* (1803)
Barton, B. S. *Elements of Botany: or Outlines of the Natural History of Vegetables.* Philadelphia, 1803. Appendix I, Bibliography of Barton's Writings, no 49.

Barton, *Elements* (1804)
Barton, B. S. *Elements of Botany: or Outlines of the Natural History of Vegetables.* London, 1804. Appendix I, Bibliography of Barton's Writings, no. 57.

Barton, *Elements* (1812)
Barton, B. S. *Elements of Botany: or Outlines of the Natural History of Vegetables.* In two volumes. Vol. 1, Philadelphia, 1812. Vol. 2, 1814. Appendix I, Bibliography of Barton's Writings, no. 156.

Barton, *Elements* (1827)
Barton, B. S. *Elements of Botany: or Outlines of the Natural History of Vegetables,* 3rd edition. Philadelphia, 1827. 2 vols. Appendix I, Bibliography of Barton's Writings, no. 175.

Barton, *Elements* (1836)
Barton, B. S. *Elements of Botany, an Outline of the Natural History of Vegetables.* Philadelphia, 1836. Appendix I, Bibliography of Barton's Writings, no. 176.

Barton, *Facts relative to the Opossum*
Barton, B. S. *Facts, Observations & Conjectures relative to the Generation of the Opossum of North America.* Philadelphia, 1806. Appendix I, Bibliography of Barton's Writings, no. 116.

Barton, *Flora Virginica*
Barton, B. S. *Flora Virginica; sive plantarum, praecipue indiginarum, Virginiae historia inchoata.* Philadelphia, 1812. Appendix I, Bibliography of Barton's Writings, no. 159.

Barton, *Fragments*
Barton, B. S. *Fragments of the Natural History of Pennsylvania.* Philadelphia, 1799. Appendix I, Bibliography of Barton's Writings, no. 30.

Barton, *Geographical View*

Barton, B. S. *Specimen of a Geographical View of the Trees and Shrubs, and many of the herbaceous plants of North America, between the latitudes of seventy one and twenty five.* Philadelphia, 1809. Appendix I, Bibliography of Barton's Writings, no. 144.

Barton, *Goitre*

Barton, B. S. A *Memoir concerning the Disease of Goitre, as it prevails in different Parts of North America.* Philadelphia, 1800. Appendix I, Bibliography of Barton's Writings, no. 39.

Barton, *Henry Moss*

Barton, B. S. "Account of Henry Moss: a white negro; together with reflections on the affection called Leucaëthiopia humana; Facts and conjectures relative to the white colour of animals, and Observations on the colour of the human species." *PMPJ* 2 (1806) Pt. 2: [3]-18. Appendix I, Bibliography of Barton's Writings, no. 121.

Barton, "Lancaster"

Barton, Rose G. *Papers, Lancaster County Historical Society* 30 (1926): 101-104.

Barton, *Letter to Lacépède*

Barton, B. S. "Letter to M. Lacépède, of Paris, On the natural history of North America..." *Philos. Mag.* 22 (1805): 97-103, 204-211. Appendix I, Bibliography of Barton's Writings, no. 88.

Barton, *Medical Botany*

Barton, W. P. C. *Vegetable Materia Medica of the United States; or Medical Botany.* Philadelphia, M. Carey & Son. 2 vols. 1817-1818.

Barton, *Memoir concerning the Hell-Bender*

Barton, B. S. *Memoir concerning an animal of the Class Reptilia, or Amphibia, which is known in the United States, by the names of Alligator and Hell-Bender.* Philadelphia,1812. Appendix I, Bibliography of Barton's Writings, no. 160.

Barton, *Memoir concerning the Rattle-snake*

Barton, B. S. *A Memoir concerning the Fascinating Faculty which has been ascribed to the Rattle-Snake and other American Serpents.* Philadelphia, 1796. Appendix I, Bibliography of Barton's Writings, no. 20.

Barton, *Memoir concerning various Species of Serpents*

Barton, B. S. *A Memoir concerning the Fascinating Faculty which has been ascribed to various Species of Serpents. A New Edition.* Philadelphia, 1814. Appendix I, Bibliography of Barton's Writings, no. 165.

Barton, *New Views*

Barton, B. S. *New Views of the Origin of Tribes and Nations of America.* Philadelphia, 1797. Appendix I, Bibliography of Barton's Writings, no. 24.

Barton, *New Views*, ed. 2

Barton, B. S. *New Views of the Origin of the Tribes and Nations of America...Second Edition.* Philadelphia, 1798. Appendix I, Bibliography of Barton's Writings, no. 25.

Barton, *Observations*

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Barton, *Prodromus*

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Barton, *Prodromus Florae Pennsylvanicae*
Barton, B. S. *Prodromus Florae Pennsylvanicae.* London, 1787. Appendix I, Bibliography of Barton's Writings, no. 2.

Barton, *Proposals*
Barton, B. S. *Proposals for Printing by Subscription, an Historical and Philosophical Inquiry into the Origin, Nature, and Design of various Remains of Antiquity.* Philadelphia, 1789. Appendix I, Bibliography of Barton's Writings, no. 13.

Barton, *Proposals for Elements of Zoology*
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Barton, *Rittenhouse*
Barton, William. *Memoir of the Life of David Rittenhouse, LLD, F.R.S.* Philadelphia, Parker, 1813. Frontispiece portrait.

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Barton, B. S. *Studies of Nature, by James Henry-Bernardin de Saint-Pierre translated by Henry Hunter, D.D.* Philadelphia, 1808. Appendix I, Bibliography of Barton's Writings, no. 138.

Barton, *Supplement to a Memoir concerning the Rattle-Snake*
Barton, B. S. *Supplement to a Memoir concerning the Fascinating Faculty which has been attributed to the Rattle-Snake, and other American Serpents.* Philadelphia, 1800. Appendix I, Bibliography of Barton's Writings, no. 40.

Bartram, *Travels*
Bartram, William. *Travels through...East and West Florida.* Philadelphia, James & Johnson, 1791. For annotations see Harper, *Bartram's Travels.*

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HUH
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Missouri Botanical Garden, St. Louis. Homepage at http://www.mobot.org.

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NYPL
New York Public Library, New York.

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Figures

Figure 1. Benjamin Smith Barton in 1789. Portrait by Samuel Jennings. Oil on canvas (30 × 35 inches), dated August 1789, painted in Philadelphia. Given by Benjamin Smith Barton's daughter-in-law, Cora Livingston Barton to J[ohn] R[hea] B[arton], his nephew. The painting lay in the vault of the First Pennsylvania Bank of North America, N.A. until its presence was made known by Alan M. Armstrong, Senior Vice President. Portrait at the American Philosophical Society, courtesy of APS.

Figure 2. Benjamin Smith Barton in 1802. Portrait by Saint-Memin. Stipple engraving by C. B. J. F. de Saint-Memin; engraved by Gobrecht for *Port Folio* (1816), editor Harrison Hall. Reproductions issued in 1897, 1900, and 1914. Courtesy of the National Portrait Gallery, Smithsonian Institution.

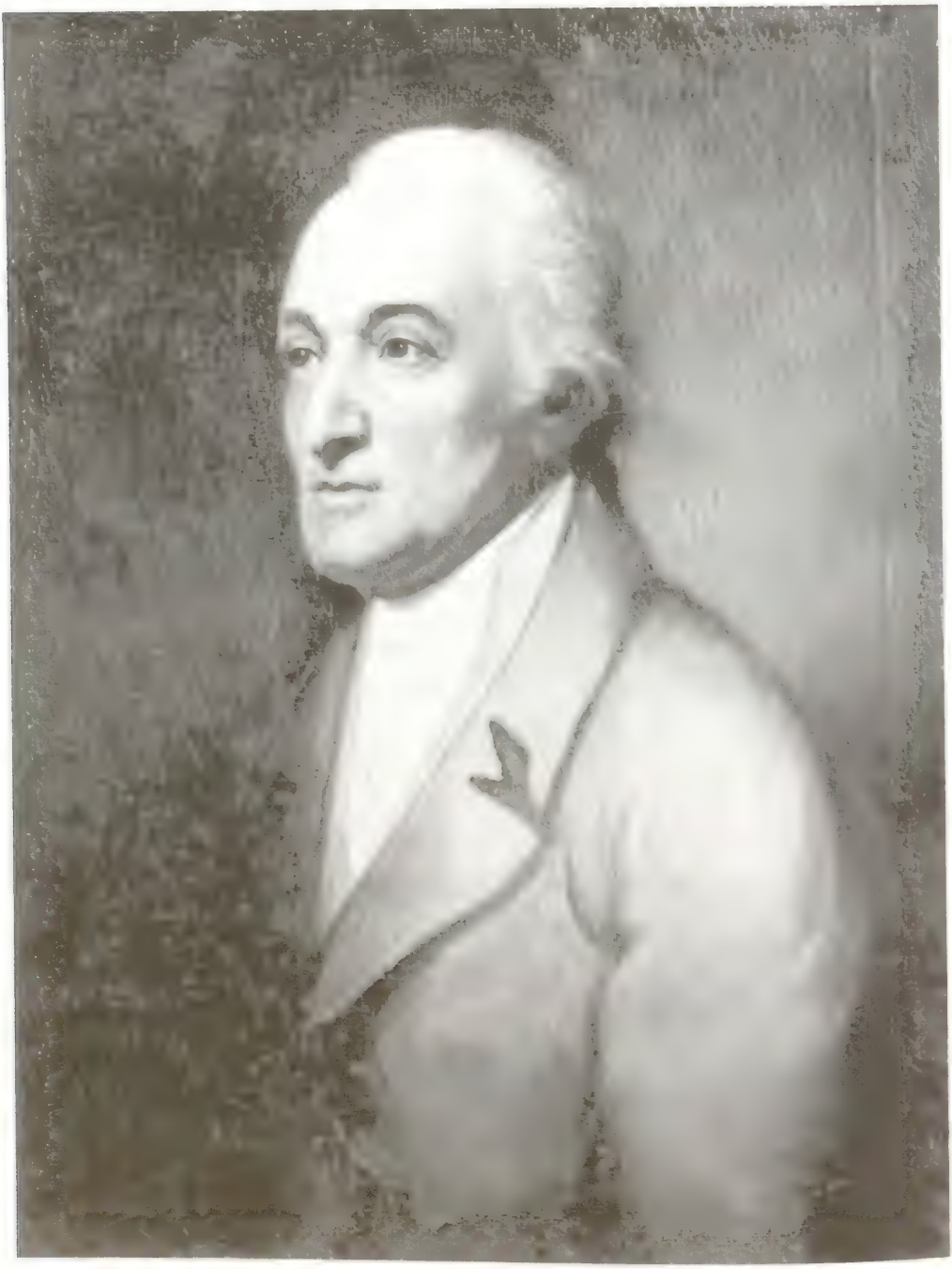


Figure 3. Benjamin Smith Barton in 1807. Portrait attributed to Charles Willson Peale. Oil on canvas (28 × 23 inches). According to W. P. C. Barton, who derided its resemblance, painted by Rembrandt Peale. Courtesy of Collections of the University of Pennsylvania Archives.

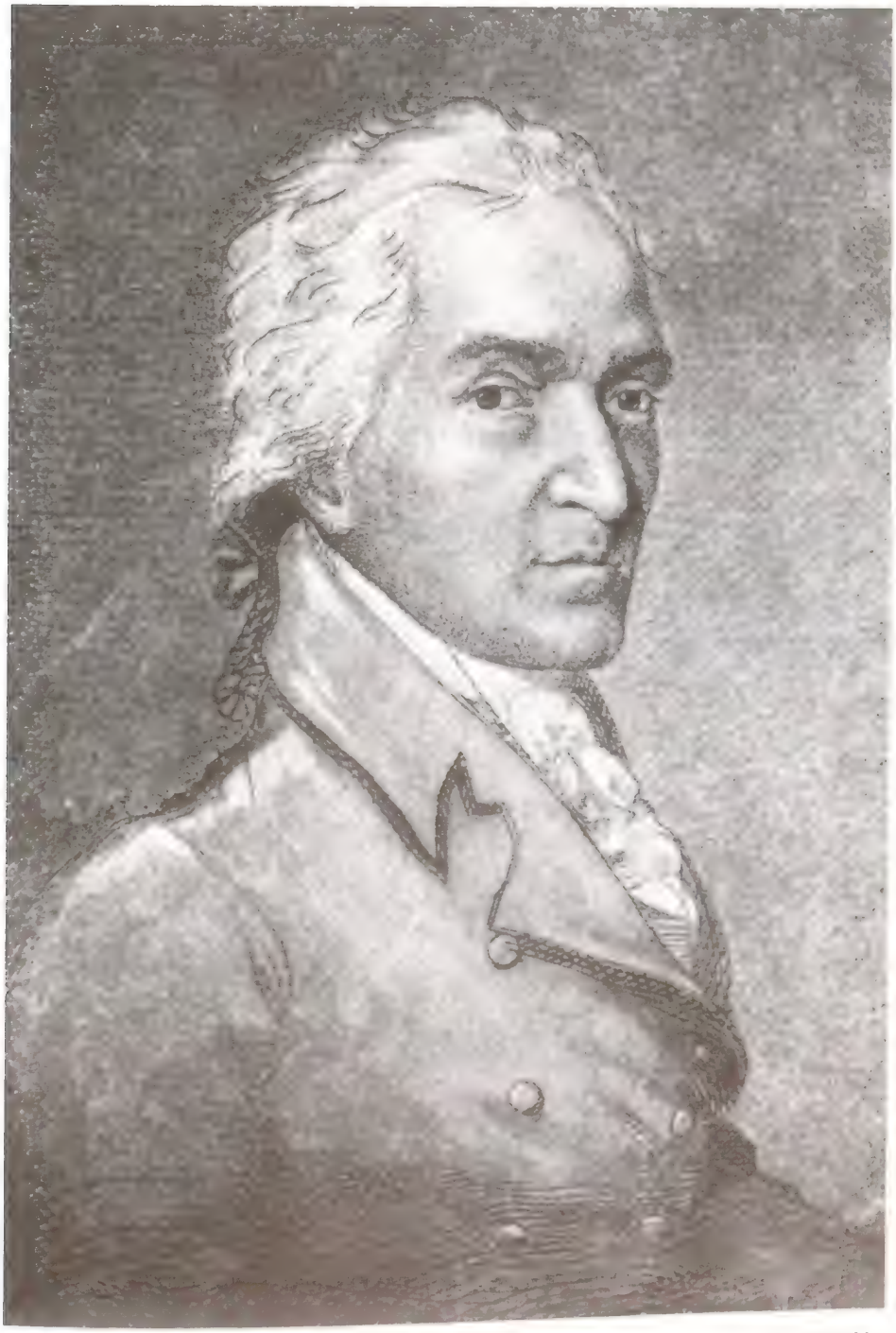


Figure 4. Benjamin Smith Barton ca. 1813. Portrait by Bass Otis. Aquatint drawn and engraved by Bass Otis, probably in 1813. According to Gainer B. Davis and Wayne Craven, *Bass Otis, Painter, Portraitist and Engraver* (Wilmington, Del., 1976), 51, the portrait was drawn "circa 1816," without a basis for the date. Barton papers, APS.

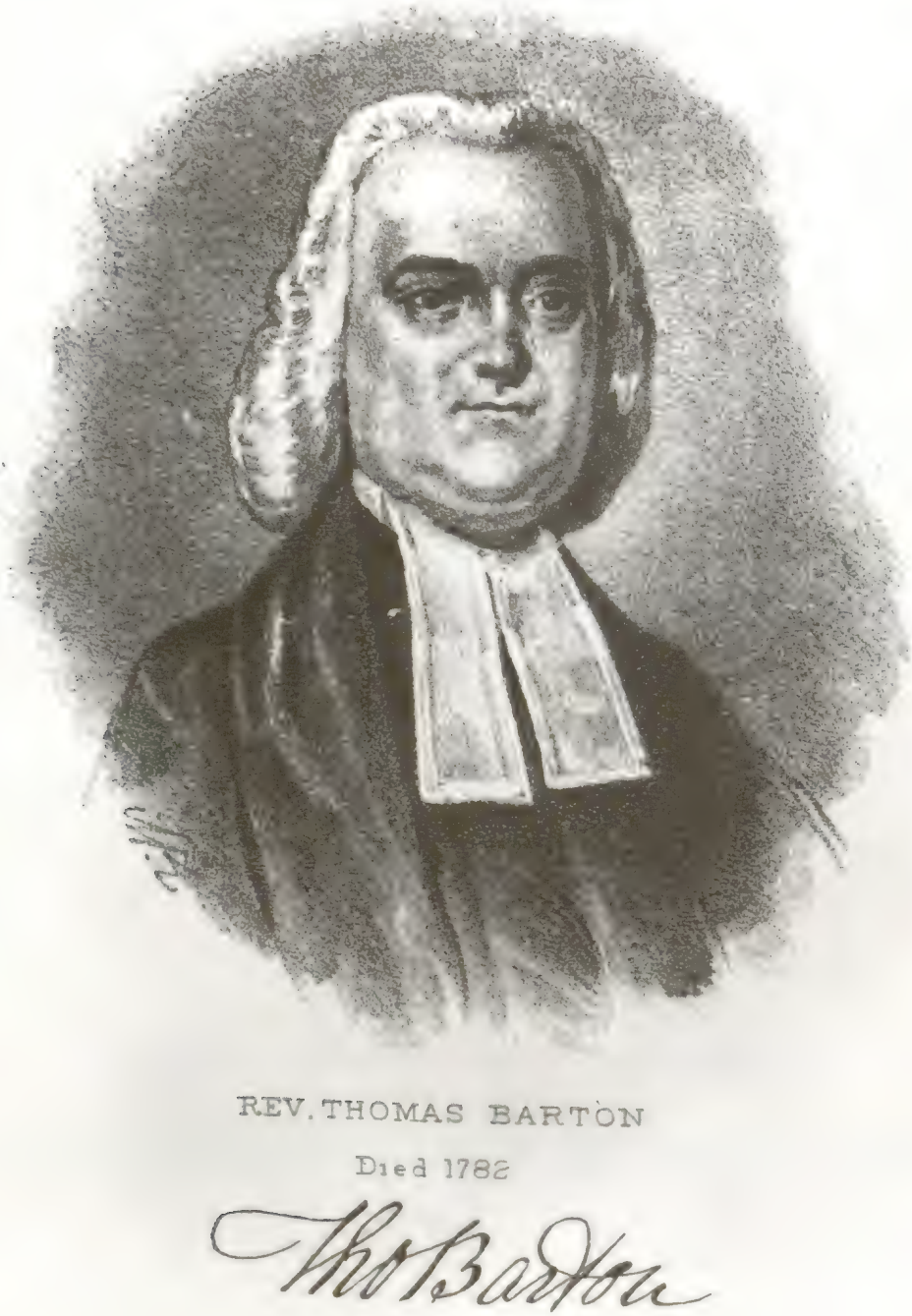


Figure 5. Rev. Thomas Barton by an unidentified artist. Portrait reproduced without provenance in Cassel, *Rittenhouse*, opposite p. 215. Courtesy of University of Pennsylvania Archives.

Figure 6. David Rittenhouse by Charles Willson Peale, 1791. Oil on canvas (37 × 27 inches) portrait in possession of the American Philosophical Society. Another portrait of David Rittenhouse by Charles Willson Peale, 1772, was the frontispiece in William Barton, *Rittenhouse*. Courtesy of APS.

Figure 7. Mary Penington Barton by Rembrandt Peale. Oil on canvas (26 1/4 × 21 inches). Probably about 1800. Provenance: B. S. Barton, Thomas Pennant Barton, Cora Livingston Barton, Gen. and Mrs. John R. Delafield, J. Dennis Delafield, Sleepy Hollow Restorations, Montgomery Place. Jim Frank, photo. Courtesy of Historic Hudson Valley.

Figure 8. Thomas Pennant Barton in Paris, 1835. Portrait by Etienne Bouchardy. Miniature painted on ivory (6 × 5 inches), metal frame (9 × 8 inches) in case with a glass front. Presented to Boston Public Library in 1915 by Julia Barton Hunt, niece by marriage to T. P. Barton. Reproduced in *Bull. Boston Public Libr.* ser. 4, 3 (1921): 172. Courtesy of the Trustees of the Boston Public Library. For Bouchardy, see Ulrich Thieme & Felix Becker, *Allgemeines Lexicon der bildenden Künstler* [Leipzig, 1907–1950, 37 vols.], 4 (1910): 426.

Figure 9. Esther Barton Zantzinger by Charles Willson Peale. Portrait of B. S. Barton's older sister, born in 1756. Reproduced in Cassel, *Rittenhouse Record*, opposite p. 18. Courtesy of Agnes Wallace Garnett Leary.

William P. C. Barton, M.D., Surgeon, U. S. Navy, Chief of The Bureau of Medicine and Surgery. September 2, 1842, to April 1, 1844.

Figure 10. William Paul Crillon Barton, while Surgeon U. S. Navy, Washington, D.C., 1842–1844. Photograph (NH 56144) illustrating Pleadwell, "Barton," courtesy of Naval Historical Center. Washington Naval Yard. For a photograph of W. P. C. Barton in later years see MacPhail, *Barton*. Though Donald C. Peattie mentions in *Dictionary of American Biography* the existence of family papers, details of both photographs are wanting.

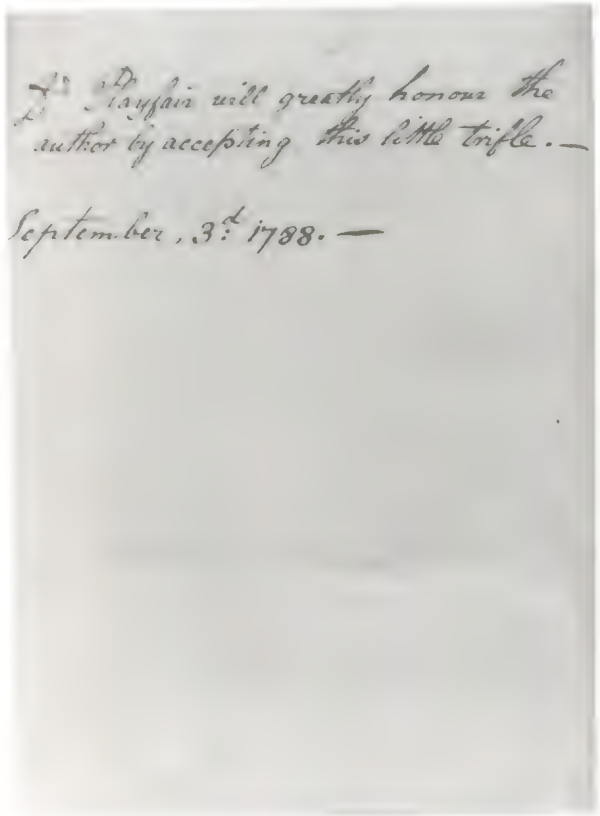
Figure 11. "Perhaps a view of ship Barton took to Europe in 1815." Pencil note in T. P. Barton's hand. In Barton papers, APS.

The Conservatory

Figure 12. Conservatory at Montgomery Place, according to A. J. Downing. Thomas Pennant Barton lived intermittently at Montgomery Place on the Hudson, and in New York City, from the time of his return from Paris with Cora Livingston Barton until his death 5 April 1869. Figure 79 in Andrew Jackson Downing, *A Treatise...on Landscape Gardening*, ed. 2 (New York & London, 1844), 423. This figure also appeared in "A Visit to Montgomery Place" in *The Horticulturalist and Journal of Rural Art and Rural Taste*, Vol. II, No. 4 (October 1847), 153–160. The exotics in the drawing, *Populus nigra* or Lombardy Poplar, as well as *Agave americana*, were typical of this period. The resemblance of the conservatory's style to that in David Hosack's Elgin Botanic Garden of the same era is noteworthy. Courtesy of Historic Hudson Valley.

Figure 13. Sketch of Ohiopyle Falls by B. S. Barton, September 1785. Frontispiece of *Columbian Magazine*, 1 (Feb. 1787), and description by David Rittenhouse, p. 284, in part, "the Falls of Yochiogeny, called in the maps, Ohiopyle Falls, are by far the most magnificent, of any thing of this kind, in the state of Pennsylvania...The falls are, by estimation, about 20 feet in perpendicular height, and the river is perhaps 80 yards wide." The sketch and description reproduced in William Winterbotham, *An Historical...View of the United States* (New York, 1796), 2, pl. opposite p. 397. Sketch follows p. 50 in Hindle, *Rittenhouse*. Courtesy of APS.

Figure 14. Museum of Natural History, Edinburgh University, in the era of B. S. Barton. From an engraving by W. H. Lizars used as a heading for letter paper by Robert Jameson, Regius Professor of Natural History and Keeper of the Museum, 1804–1854. Later, the New Reading Room of the University, and now the Talbot Rice Art Centre. Permission of the Edinburgh University Library.



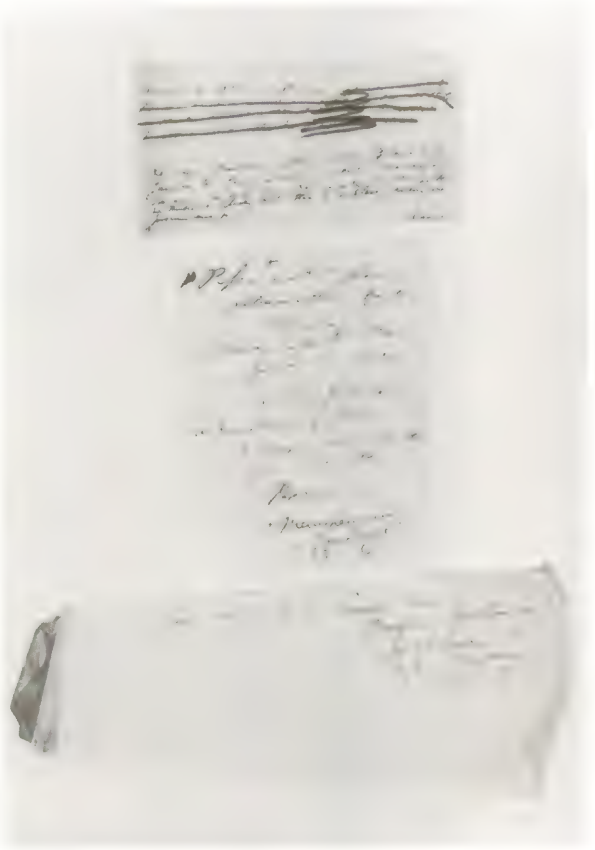


Figure 15. Barton's handwriting in 1788, and after 1805. Presentation inscription in Barton's *Observations* to John Playfair (1748–1819), University of Edinburgh, 3 September 1788. Ewan Collection copy, Missouri Botanical Garden Library, St. Louis. Memoranda made by Barton on scraps of paper scattered among his letters. The lower note on *Menispermum canadense*, moonseed, mentions "Mr. [Francis Walker] Gilmer" (1790–1826), lawyer of Albemarle Co., Virginia. Gilmer does not appear elsewhere in Barton's surviving papers.

Figure 16. William Hamilton's estate, the "Woodlands," engraved by William Strickland after William Birch. William Strickland (1788–1854), an apprentice of Benjamin Latrobe in 1803, was active in Philadelphia beginning in 1809. Reproduced from Frederick D. Nichols and Ralph E. Griswold, *Thomas Jefferson, Landscape Architect* (Charlottesville, 1978), 133, fig. 70. Courtesy of The Historical Society of Pennsylvania, Society Print Collection.

Figure 17. Lower intestinal tract of an unidentified non-human subject. Ink drawing (12 × 12 1/2 inches) by Barton about 1784. Barton papers, APS, undated, but from technique probably done while Barton was apprentice to Dr. Shippen.

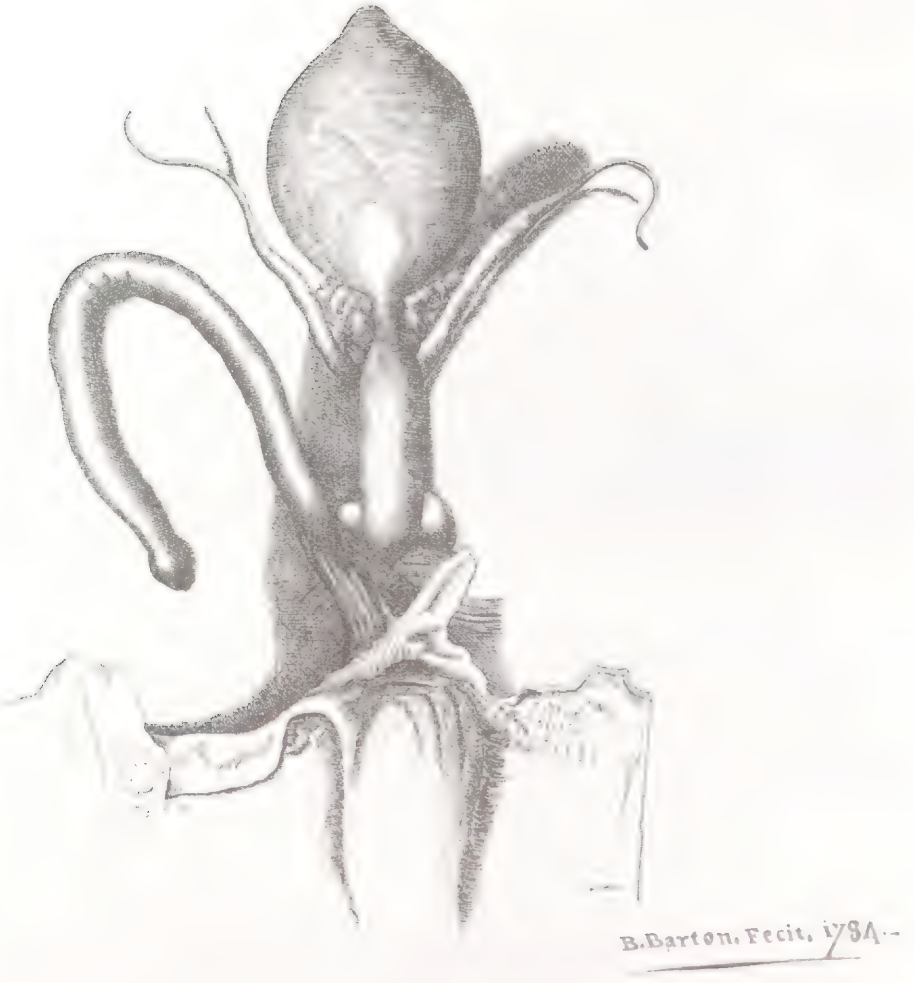
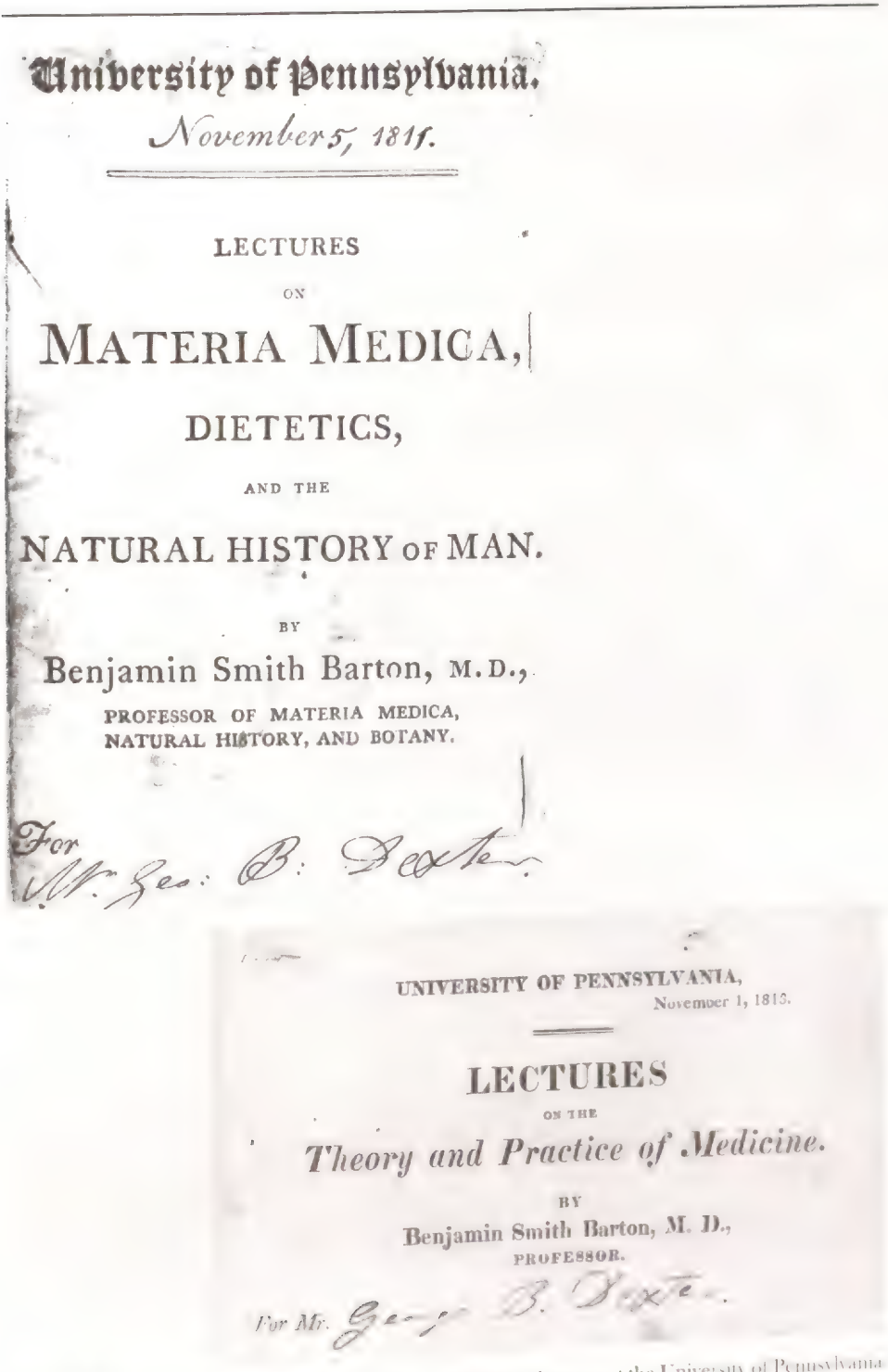


Figure 18. Reproductive tract of the male opossum, *Didelphis virginiana*. Ink drawing (9 ¼ × 12 inches) by Barton. Barton papers, APS, the drawing signed "B. Barton fecit, 1784." In 1805 Barton announced he had "made very considerable progress" in his "anatomical and physiological inquiries concerning the Common Opossum," which he "designed" to publish in two memoirs, one "representing the progressive evolution of the parts of the embryon and fœtal opossums; besides engravings of the male and female organs of generation." *PMPJ* 2 (1805) Pt. 1: 156. This was followed the next year by a 14-page pamphlet for distribution among friends (see Appendix I, Bibliography of Barton's Writings, no. 116). Drs. Edward McCrady Peebles and Stephen Reich provided critical interpretation.

Figure 19. Library of Pennsylvania Hospital. After the purchase of 177 of Barton's books in 1816, they were shelved here. The long room served as a lying-in ward from 1824 to 1835 (Francis Randolph Packard, *Some Account of Pennsylvania Hospital*...(1938), 64–65). Folios were housed in cases on the main floor, and smaller books were shelved on the balcony. Photograph by Robert S. Halvey, 1967, courtesy Pennsylvania Hospital Historic Collections, Philadelphia.

Figure 20. Surgeons' Hall in 1799 by William Birch and Son. Some of the classes of the medical school were held in "Surgeons' Hall" or "Anatomical Hall" or simply "The Laboratory," on the northeast corner of Fifth and Walnut streets until 1802. The conspicuous cupola, providing light for the operation, identifies the dissecting theater on the first floor. George B. Tatum in *Art of Philadelphia Medicine* (Philadelphia, 1965), 108–109. Detail from plate 19, Wm. Birch and Son, *City of Philadelphia...*[as it appeared in 1800] (Philadelphia, 1800). Courtesy of Collections of the University of Pennsylvania Archives.

Figure 21. University of Pennsylvania Medical School about 1812. Second site of the Medical School, on Ninth Street between Market and Chestnut, where the Post Office stands today, the remodeled rooms of the mansion erected for President John Adams (who declined to live in it). It was acquired by the University in 1800. Butterfield, *Rush*, lix, 973. Rush, Barton, and the others lectured in the building on the left. Drawn by George Strickland and engraved by J. W. Steel. From Cephas G. Childs's *Views in Philadelphia and its Environs* (Philadelphia, 1830). Courtesy of Collections of the University of Pennsylvania Archives.


University of Pennsylvania.

November 5, 1811.

LECTURES

ON

MATERIA MEDICA,

DIETETICS,

AND THE

NATURAL HISTORY OF MAN.

BY

Benjamin Smith Barton, M.D.,

PROFESSOR OF MATERIA MEDICA,
NATURAL HISTORY, AND BOTANY.

For Mr. Geo. B. Dexter.

UNIVERSITY OF PENNSYLVANIA,
November 1, 1813.

LECTURES

ON THE

Theory and Practice of Medicine.

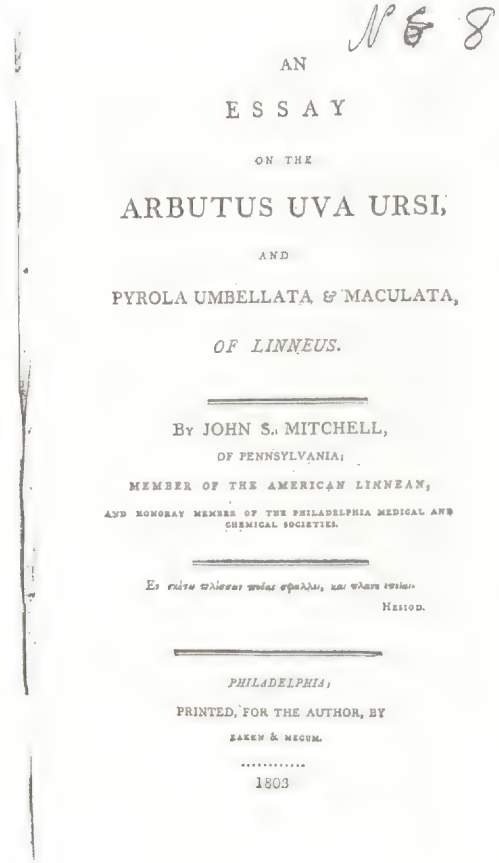
BY

Benjamin Smith Barton, M. D.,

PROFESSOR.

For Mr. Geo. B. Dexter.

Figure 22. Tickets of admission, front and back, to Barton's lectures at the University of Pennsylvania in 1811 and 1812. Carson coll. vol. 3. CPP. Photograph courtesy of Thomas A. Horrocks, the College of Physicians of Philadelphia.



N° 8

AN

ESSAY

ON THE

ARBUTUS UVA URSI,

AND

PYROLA UMBELLATA & MACULATA,

OF LINNEUS.

By JOHN S. MITCHELL,

OF PENNSYLVANIA;

MEMBER OF THE AMERICAN LINNEAN,

AND HONORAY MEMBER OF THE PHILADELPHIA MEDICAL AND CHEMICAL SOCIETIES.

Εν σκότω πλίσσων ποδας σφαλλει, και πλανη επειαι.

Hesiod.

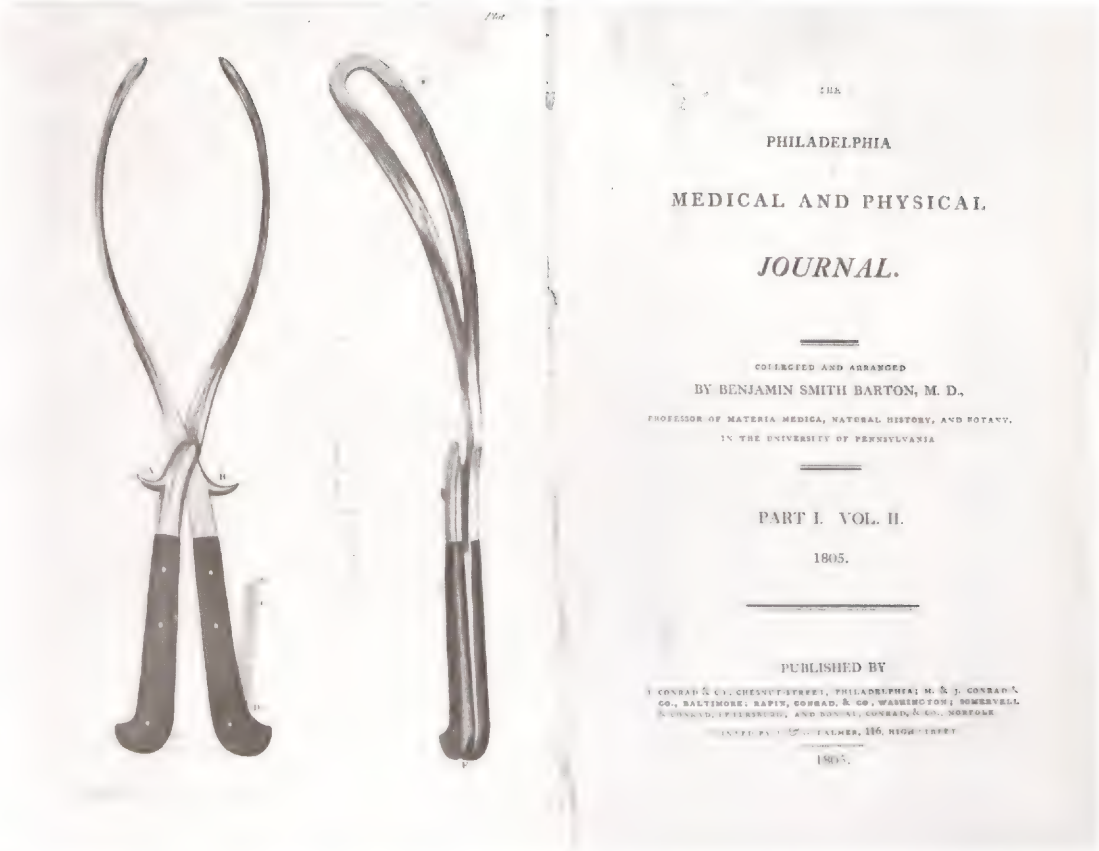
PHILADELPHIA;

PRINTED, FOR THE AUTHOR, BY

ZAKEN & MECUM.

1803

Figure 23. Title page of thesis by Barton's pupil. John S. Mitchell, *An Essay on Arbutus uva-ursi* [now *Arctostaphylos uva-ursi*, Bearberry] (Philadelphia, 1803). Frontispiece of *Pyrola umbellata* [now *Chimaphila umbellata*, Pipsissewa] by William Bartram, engraved by Benjamin Tanner. Austin, *Imprints*. From a copy at APS.



THE

PHILADELPHIA

MEDICAL AND PHYSICAL

JOURNAL.

COLLECTED AND ARRANGED

BY BENJAMIN SMITH BARTON, M. D.,

PROFESSOR OF MATERIA MEDICA, NATURAL HISTORY, AND BOTANY,

IN THE UNIVERSITY OF PENNSYLVANIA

PART I. VOL. II.

1805.

PUBLISHED BY

J. CONRAD & CO., CHESNUT-STREET, PHILADELPHIA; M. & J. CONRAD & CO., BALTIMORE; RAPIN, CONRAD, & CO., WASHINGTON; SOMERVELL & CONRAD, PITTSBURGH, AND DONNAL, CONRAD, & CO., NORFOLK.

PRINTED BY T. PALMER, 116, HIGH-STREET.

1805.

Figure 24. Title page of an 1805 number of *Philadelphia Medical and Physical Journal* with Plate 2 inserted as frontispiece. Note that the *Journal* was sold by five agents of Conrad as far south as Norfolk, Virginia. Courtesy of APS.

MATERIÆ MEDICÆ TABULA GENERALIS.

In qua Medicamenta ad Capita quædam secundum indicationes morborum curatorias quibus respondent, referuntur.

MATERIA MEDICA constat ex

- NUTRIMENTIS quæ sunt, P. I.
  - *Cibi*, Sect. I.
  - *Potus*, S. II.
  - et quæ cum his assumuntur *Condimenta*, S. III.
- MEDICAMENTIS quæ agunt in P. II.
  - Solida.
    - Simplicia.
      - *Astringentia*, Cap. I.
      - *Tonica*, C. II.
      - *Emollientia*, C. III.
      - *Erodentia*, C. IV.
    - Viva.
      - *Stimulantia*, C. V.
      - *Sedantia*, C. VI.
        - *Narcotica*,
        - *Refrigerantia*, C. VII.
      - *Antispasmodica*, C. VIII.
  - Fluida.
    - Immutantia.
      - Fluiditatem.
        - *Attenuantia*, C. IX.
        - *Inspissantia*, C. X.
      - Misturam.
        - Acrimoniam corrigentia.
          - In genere
            - *Demulcentia*, C. XI.
          - In specie
            - *Antacida*, C. XII.
            - *Antalkalina*, C. XIII.
            - *Antiseptica*, C. XIV.
    - Evacuantia.
      - *Errhina*, C. XV.
      - *Sialogoga*, C. XVI.
      - *Expectorantia*, C. XVII.
      - *Emetica*, C. XVIII.
      - *Cathartica*, C. XIX.
      - *Diuretica*, C. XX.
      - *Diaphoretica*, C. XXI.
      - *Menagoga*, C. XXII.
      - *Anthelmintica*, C. XXIV.
      - *Antilithica?*, C. XXV.

Figure 25. Classification of *Materia Medica* in 1812. From Barton's *Cullen's Treatise*, 127. The use of dichotomous keys in plant systematics is reflected in this classification of remedial substances used at the time in the practice of medicine. Courtesy of Tulane University Health Sciences Center, Rudolph Matas Medical Library.

PROFESSOR CULLEN'S

TREATISE

OF

THE MATERIA MEDICA.

WITH LARGE ADDITIONS,

INCLUDING

MANY NEW ARTICLES,

WHOLLY OMITTED IN THE ORIGINAL WORK

BY BENJAMIN SMITH BARTON, M. D.

ONE OF THE PHYSICIANS TO THE PENNSYLVANIA HOSPITAL; AND PROFESSOR OF MATERIA MEDICA, NATURAL HISTORY, AND BOTANY, IN THE UNIVERSITY OF PENNSYLVANIA.

IN TWO VOLUMES.

VOL. I.

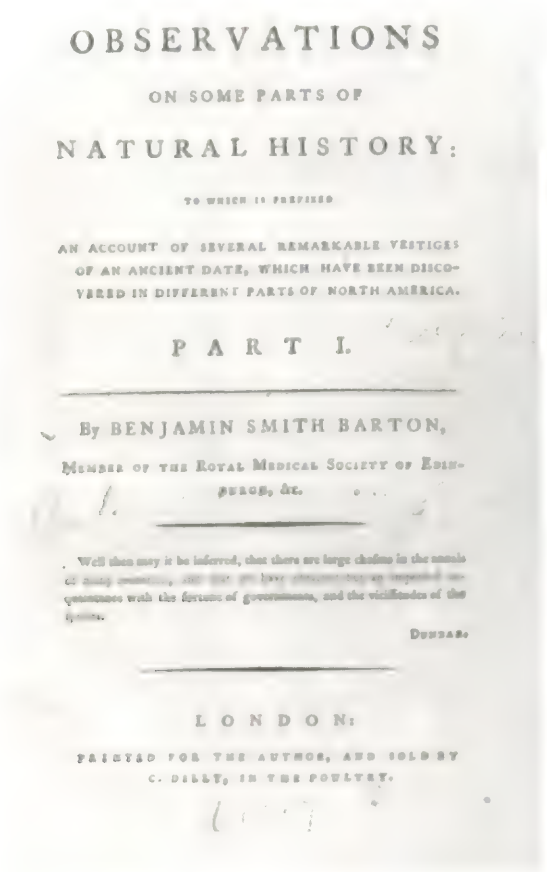
PHILADELPHIA:

PUBLISHED BY EDWARD PARKER, NO. 172, MARKET-STREET.

1812.

William Brown, Printer, Church-Alley.

Figure 26. Title page of Barton's *Cullen's Treatise*. The extensive byline of authorship here compared with Figure 69, *Memoir concerning the Hell-Bender* [*Cryptobranchus alleganiensis*], suggests Barton's greater supervision of this book over his other publication of the same year. Courtesy of Tulane University Health Sciences Center, Rudolph Matas Medical Library.



OBSERVATIONS

ON SOME PARTS OF

NATURAL HISTORY:

TO WHICH IS PREFIXED

AN ACCOUNT OF SEVERAL REMARKABLE VESTIGES OF AN ANCIENT DATE, WHICH HAVE BEEN DISCOVERED IN DIFFERENT PARTS OF NORTH AMERICA.

PART I.

By BENJAMIN SMITH BARTON,

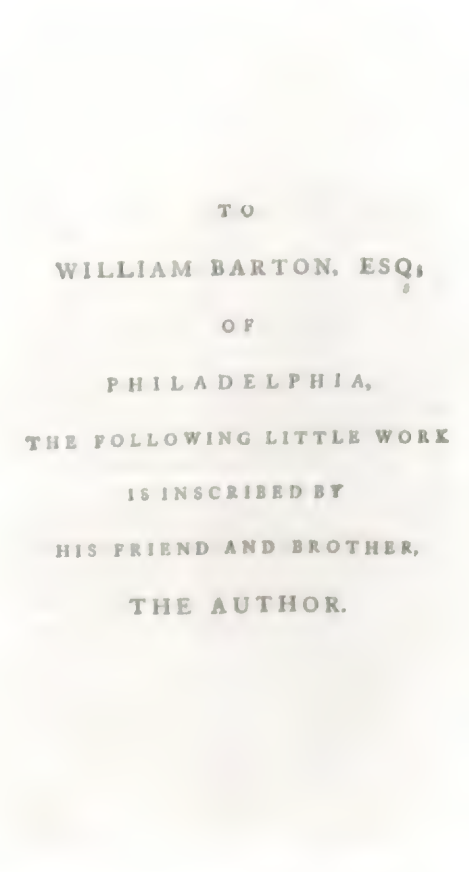
Member of the Royal Medical Society of Edinburgh, &c.

Well then may it be inferred, that there are large chasms in the annals of many countries, and that we have [illegible] by an imperfect acquaintance with the fortune of governments, and the vicissitudes of the species.

Dunbar.

LONDON:

PRINTED FOR THE AUTHOR, AND SOLD BY C. DILLY, IN THE POULTRY.



TO

WILLIAM BARTON, ESQ;

OF

PHILADELPHIA,

THE FOLLOWING LITTLE WORK

IS INSCRIBED BY

HIS FRIEND AND BROTHER,

THE AUTHOR.

Figure 27. Title and dedication pages of Barton's *Observations*. From the Ewan Collection, Missouri Botanical Garden Library, St. Louis.

Figure 28. Indian artifacts "taken out of an Indian grave, in the country of the Five Nations." Undated watercolor (6 × 12 inches). Barton papers, APS. The bowl gray; horns, blue and gray. William Fenton, anthropologist, suggests that the "pot is classic Iroquois" (letter 1 Oct. 1982). Robert D. Fisher, zoologist, National Museum of Natural History, Washington, D.C., suggests that the horns "do not appear to be any recent North American ungulate," and that "they are African in origin, possibly of *Alcelaphus* [*buselaphus*], the hartebeest" (letter of 22 Nov. 1982).

Figure 29. "Dog of the American Indians" [*Canis familiaris*]. Engraving (9 1/4 × 5 1/4 inches) by Barton. Barton papers, APS.

GUIDE

*TO THE PHILADELPHIA MUSEUM.**

ADMISSION 25 CENTS.

THE regulation of paying at entrance, saves much trouble, and prevents unpleasant mistakes.

———"*Here, undisturb'd*
"*By noisy Folly and discordant Vice,*
"*On Nature muse with us and Nature's* GOD!"
[*Milton.*

LOBBY,

Contains a large ELECTRICAL APPARATUS, sufficiently powerful to give a moderate shock, without the Leyden Phial—likewise, a GALVANIC APPARATUS.

* *This Museum is the property of Charles W. Peale, who began it in* 1785. *Unceasing industry has raised it to a respectable scale.* —— *For ten years it was kept in the Philosophical Hall, where a branch of it still remains; but in* 1802, *the Legislature of Pennsylvania, influenced by an idea of its increasing utility, granted for the use of the Museum, the greatest part of the State-house, where it is now displayed in a manner better becoming the importance of the Institution, and more worthy of the State which gave it birth.*

Figure 30. First edition of visitor's guide to Peale's Museum, *Guide to the Philadelphia Museum* (Philadelphia, September 1801), belonged to Barton's pupil, Felix Robertson. Second edition of *Guide* (Philadelphia, 1806), at APS (see Richardson, *Peale*, 156). The floor plan with exhibits listed for each room (Sellers, *Peale, a Biography*, 334) complements the guide. Courtesy of Rare Book and Manuscript Library, University of Pennsylvania.

Figure 31. Watercolor of "Hottentot Girl" by William Haines. Born in Hampshire, England, in 1778. Haines went to the Cape of Good Hope when he was twenty-two. There he may have drawn the portrait (12 × 16 ⅜ inches). He arrived in Philadelphia from England in 1802. According to the APS, "Minutes," 371, he engraved portraits of Barton, Rush, and Wistar (Coxe, *Philadelphia Med. Mus.* 1 (1804): 446), which were received as a "donation" 15 Feb. 1805. Haines returned to England about 1809 (Groce & Wallace, *Artists*, 283). Haines' portrait of Barton has not been located. Barton papers, APS.

Figure 32. John Coakley Lettsom in 1800 by Samuel Medley. Portrait in Fox, *Fothergill*, opposite p. 99. Lettsom was central in the group of twenty-two chief physicians of the Medical Society of London painted by Samuel Medley (1769–1857). Reproduced in Abraham, *Lettsom*, 336. Courtesy of the Medical Society of London.

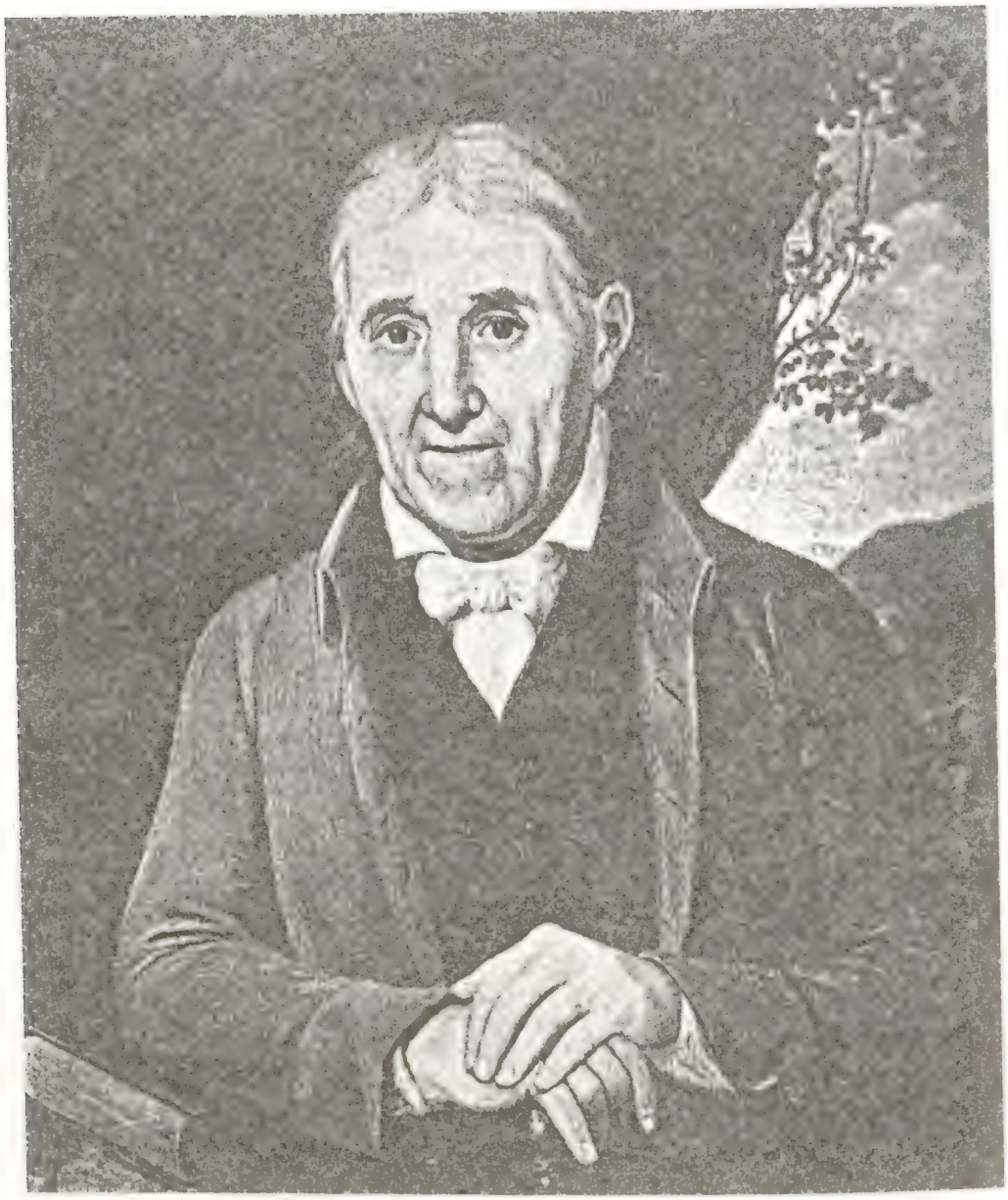


Figure 33. John Gottlieb Ernestus Heckewelder, about 1820, by John Lewis Krimmel. Oil on canvas. Heckewelder was the leading source of critical opinion on Indian languages and customs in Barton's circle. Portrait commissioned by Peter Stephen Duponceau for the American Philosophical Society. See W. J. Bell, Jr., in *Antiques* 104 (1973): 886. Courtesy of APS.

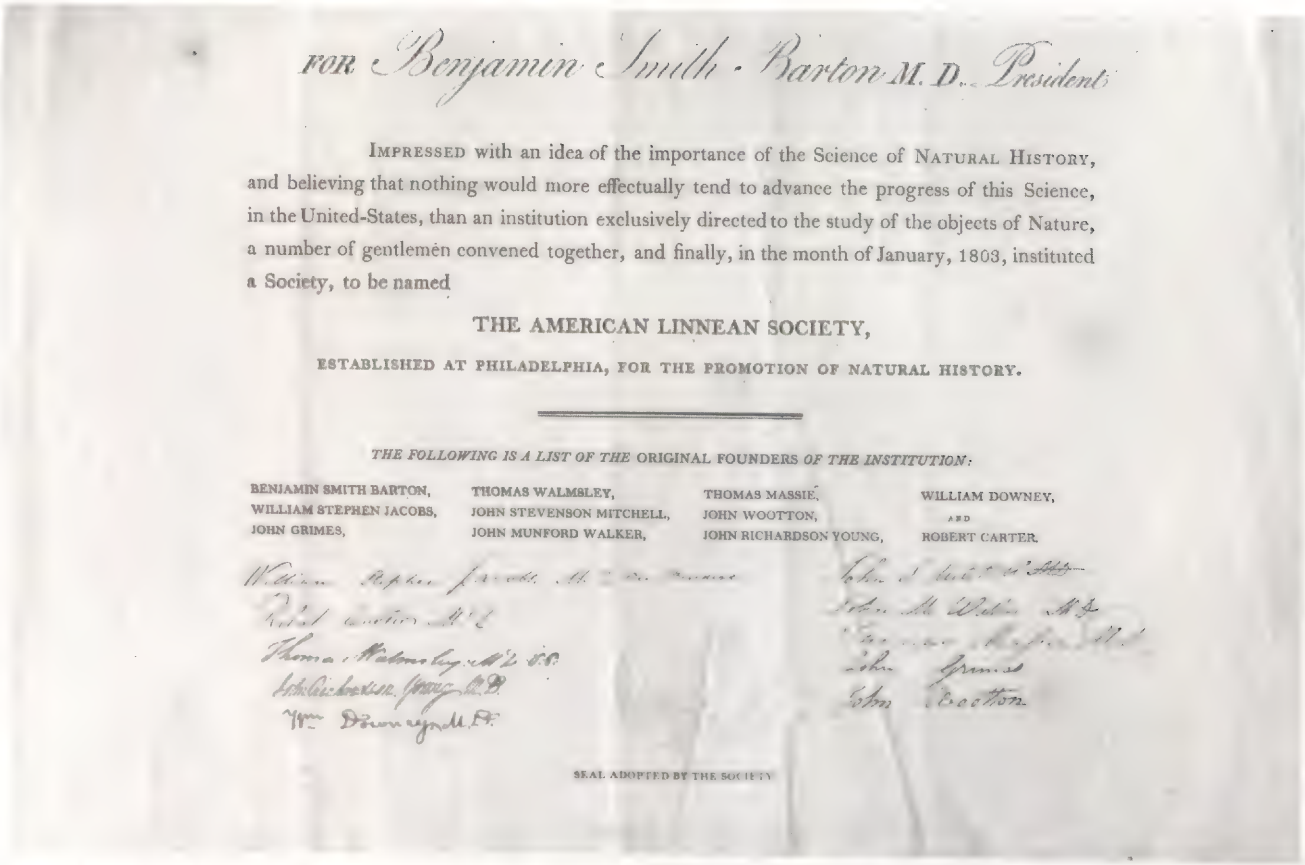
Figure 34. Alexander von Humboldt by Charles Willson Peale. Finished from a sitting in Philadelphia, 27 June 1804. Courtesy of The College of Physicians of Philadelphia. "Among all other portraits, American and European, this painting is unique for its timing...in the triumph of his American explorations...Its singular charm lies in its youthful freshness," wrote Helmut de Terra, *Proc. Amer. Philos. Soc.* 102 (1958): 576. A silhouette was also made at the physiognotrace when Humboldt visited Peale's Museum, with "extra cuttings for friends" (Sellers, *Peale's Museum*, 161-163). Courtesy of The College of Physicians of Philadelphia.

Figure 35. Joseph Banks in 1802 by Rembrandt Peale. Oil on canvas (23 1/2 × 19 1/2 inches), commissioned by his father, painted in London during Rembrandt Peale's exhibition of the mastodon skeleton. The Banks portrait was listed as no. 61 in Rembrandt's own copy of the sales catalogue of the Peale Museum portraits at Pennsylvania Historical Society, Philadelphia. Purchased by Joseph Harrison, Jr., for $10 at the sale of M. Thomas and Sons, Philadelphia, 6 October 1854, and presented to the Academy of Natural Sciences, Philadelphia, where it hangs in the library today (Hevner & Miller, *Rembrandt Peale*, 40–41). Courtesy of The Academy of Natural Sciences, Ewell Sale Stewart Library.

Figure 36. Thomas Pennant in 1776 by Thomas Gainsborough. The portrait was acquired by the National Museum of Wales, Cathays Park, Cardiff, by purchase in 1953 from Arthur Tooth, a London dealer. From Pennant, the portrait descended to Countess of Denbigh and then to Viscount Feilding who sold it at Christie's, January 7, 1938 (no. 46) to Tooth. Prints of the portrait engraved by W. Ridley were announced for sale at "Mr. Hazel's, no. 7, Bridges Street, Covent Garden." Published as frontispiece in Pennant's *Literary Life*. W. H. Lizars engraved a similar modified version for William Jardine's *The Naturalist's Library* (London, 1834–1836), vol. 7. Courtesy of the National Museum of Wales.

CORREIA DA SERRA

Figure 37. Corrêa la Serra by an unidentified artist. Undated portrait appeared in Carvalho, *Correia*, opposite p. 40, published by the Academy of Sciences of Lisbon in 1948. Davis, *Corrêa*, 91, reproduced a da Serra portrait by Rembrandt Peale, but does not comment on this earlier portrait. A different portrait by Charles B. Lawrence appears in APS, *Portraits*, their figure 34. Extensive efforts to identify the artist and current ownership of this portrait were unsuccessful.



FOR *Benjamin Smith Barton* M. D. *President*

IMPRESSED with an idea of the importance of the Science of NATURAL HISTORY, and believing that nothing would more effectually tend to advance the progress of this Science, in the United-States, than an institution exclusively directed to the study of the objects of Nature, a number of gentlemen convened together, and finally, in the month of January, 1803, instituted a Society, to be named

THE AMERICAN LINNEAN SOCIETY,

ESTABLISHED AT PHILADELPHIA, FOR THE PROMOTION OF NATURAL HISTORY.

THE FOLLOWING IS A LIST OF THE ORIGINAL FOUNDERS *OF THE INSTITUTION:*

BENJAMIN SMITH BARTON,
WILLIAM STEPHEN JACOBS,
JOHN GRIMES,
THOMAS WALMSLEY,
JOHN STEVENSON MITCHELL,
JOHN MUNFORD WALKER,
THOMAS MASSIE,
JOHN WOOTTON,
JOHN RICHARDSON YOUNG,
WILLIAM DOWNEY,
AND
ROBERT CARTER.

SEAL ADOPTED BY THE SOCIETY

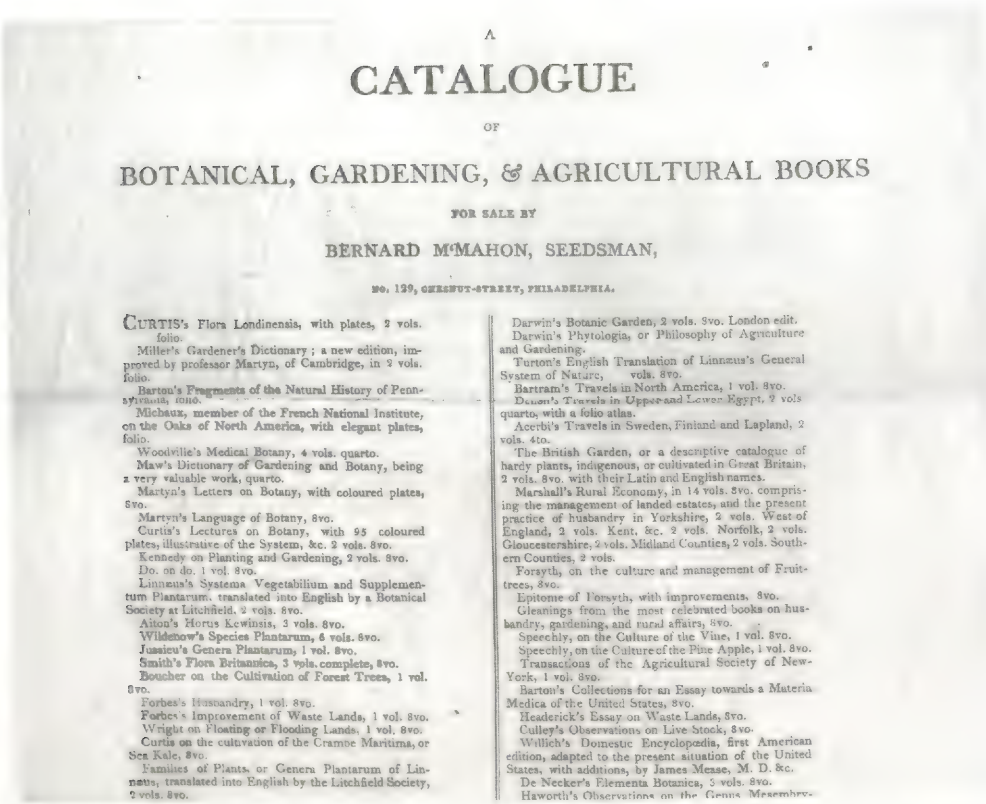
Figure 38. Barton's certificate of membership in the American Linnaean Society. Neither this nor John Richardson Young's certificate (Ms. coll. 6, Academy of Natural Sciences, Philadelphia) carried a date. Barton papers, APS.

Figure 39. Thomas Nuttall by an unknown artist. Oil on canvas (29 × 24 inches), Harvard University Portrait Collection. Courtesy of Hollis G. Bedell, Harvard University Botany Libraries, where the portrait hangs today. B. L. Robinson reported that "the excellent oil painting of [Nuttall] at the Herbarium is very similar to, though by no means identical with, the one in possession of the Boston Society of Natural History" (*Harvard Alumni Bull.* 33: 694. 1931). Evidently the Harvard portrait is a copy made for Mrs. Elizabeth Shaw Craigie (1772–1841), acquired by Prof. Edward Tuckerman and presented by Tuckerman to Asa Gray in 1865 to be placed in the then-new Herbarium Building. The original Nuttall portrait may have been commissioned by publisher James Brown (1800–1885) about 1831. Brown, who was employed in William Hilliard's bookstore in Cambridge, knew Nuttall during his Cambridge years, and Hilliard and Brown published Nuttall's *Manual of the Ornithology of the United States and Canada* (Cambridge, Massachusetts, December 1831). Nuttall acknowledged Brown in his Preface. On Brown's death, March 10, 1855, his library was bequeathed to the Boston Society of Natural History (Bouvé, "Boston Society," 63–64), and according to Charles Foster Batchelder, Brown's widow presented a portrait to the Society on 2 October 1855. This portrait has been reproduced, and it was incorporated in the insignia of the Nuttall Ornithological Club (William E. Davis, Jr., *History of the...Nuttall Ornithological Club*, Cambridge, Massachusetts, 1987). This portrait given to the Boston Society, the best of several Nuttall portraits known, thus has an uncertain history.

Figure 40. William Baldwin in 1819 by Charles Willson Peale. Dr. Baldwin, Barton's pupil, sat for three hours for Peale on 6 March 1819, shortly before setting out on Long's Expedition to the Rocky Mountains, but he died near St. Louis. Baldwin's portrait, along with those of four other members of the expedition, was hung in Peale's Museum. It was later owned by Mary Thatcher of Tennessee, who loaned the painting to the Hunter Museum of Chattanooga for many years. The Museum returned it in 1986 to Mrs. Thatcher's daughter, Elizabeth Uehlein, the last known owner. The present location of the original is unknown. See Darlington, *Baldwin*, xxvii, 304; Sellers, *Peale's Museum*, 240.

Figure 41. Spiderlily, *Hymenocallis*. Ink drawing (6 1/2 × 12 1/4 inches) by John Bartram, Jr. Barton papers, APS. This drawing is the only one known to be by William Bartram's brother. Though we do not know the source of the plant illustrated, there is cogent basis for its having been taken on the Carolina coastal plain by William Bartram and grown in the Bartram garden. "*Pancratium fluitans*, a very small species" is mentioned in his *Travels*, 35, from the cataracts of Augusta, Georgia (Harper, *Bartram's Travels*, 587). This suggests he was familiar with Spiderlilies. The drawing is matched by fig. 349 in R. K. Godfrey and J. W. Wooten, *Aquatic and Wetland Plants of Southeastern United States, Monocotyledons* (Athens, Ga., 1979), 603, though they decline to identify the species. John Bartram, Jr., as a nurseryman had contacts with Jefferson in 1801 and 1802, and William Prince of New York City in 1812. *Pancratium fluitans* Fraser ex Schult. f. is now referred to *Pancratium nutans* Ker Gawl.

Figure 42. Site of M'Mahon's Seed Store on Second near Market Street, Philadelphia, next to Christ Church (Episcopal). A row of Osage Orange trees [*Maclura pomifera*] dating from what must have been his plantings looms beside the church. Barbara H. Emerson photograph, April 1976.



A

CATALOGUE

OF

BOTANICAL, GARDENING, & AGRICULTURAL BOOKS

FOR SALE BY

BERNARD M'MAHON, SEEDSMAN,

No. 129, CHESNUT-STREET, PHILADELPHIA.

CURTIS's Flora Londinensis, with plates, 2 vols. folio.

Miller's Gardener's Dictionary; a new edition, improved by professor Martyn, of Cambridge, in 2 vols. folio.

Barton's Fragments of the Natural History of Pennsylvania, folio.

Michaux, member of the French National Institute, on the Oaks of North America, with elegant plates, folio.

Woodville's Medical Botany, 4 vols. quarto.

Maw's Dictionary of Gardening and Botany, being a very valuable work, quarto.

Martyn's Letters on Botany, with coloured plates, 8vo.

Martyn's Language of Botany, 8vo.

Curtis's Lectures on Botany, with 95 coloured plates, illustrative of the System, &c. 2 vols. 8vo.

Kennedy on Planting and Gardening, 2 vols. 8vo.

Do. on do. 1 vol. 8vo.

Linnæus's Systema Vegetabilium and Supplementum Plantarum, translated into English by a Botanical Society at Litchfield, 2 vols. 8vo.

Aiton's Hortus Kewinsis, 3 vols. 8vo.

Wildenow's Species Plantarum, 6 vols. 8vo.

Jussieu's Genera Plantarum, 1 vol. 8vo.

Smith's Flora Britannica, 3 vols. complete, 8vo.

Boucher on the Cultivation of Forest Trees, 1 vol. 8vo.

Forbes's Husbandry, 1 vol. 8vo.

Forbes's Improvement of Waste Lands, 1 vol. 8vo.

Wright on Floating or Flooding Lands, 1 vol. 8vo.

Curtis on the cultivation of the Crambe Maritima, or Sea Kale, 8vo.

Families of Plants, or Genera Plantarum of Linnæus, translated into English by the Litchfield Society, 2 vols. 8vo.

Darwin's Botanic Garden, 2 vols. 8vo. London edit.

Darwin's Phytologia, or Philosophy of Agriculture and Gardening.

Turton's English Translation of Linnæus's General System of Nature, vols. 8vo.

Bartram's Travels in North America, 1 vol. 8vo.

Denon's Travels in Upper and Lower Egypt, 2 vols quarto, with a folio atlas.

Acerbi's Travels in Sweden, Finland and Lapland, 2 vols. 4to.

The British Garden, or a descriptive catalogue of hardy plants, indigenous, or cultivated in Great Britain, 2 vols. 8vo. with their Latin and English names.

Marshall's Rural Economy, in 14 vols. 8vo. comprising the management of landed estates, and the present practice of husbandry in Yorkshire, 2 vols. West of England, 2 vols. Kent, &c. 2 vols. Norfolk, 2 vols. Gloucestershire, 2 vols. Midland Counties, 2 vols. Southern Counties, 2 vols.

Forsyth, on the culture and management of Fruit-trees, 8vo.

Epitome of Forsyth, with improvements, 8vo.

Gleanings from the most celebrated books on husbandry, gardening, and rural affairs, 8vo.

Speechly, on the Culture of the Vine, 1 vol. 8vo.

Speechly, on the Culture of the Pine Apple, 1 vol. 8vo.

Transactions of the Agricultural Society of New-York, 1 vol. 8vo.

Barton's Collections for an Essay towards a Materia Medica of the United States, 8vo.

Headerick's Essay on Waste Lands, 8vo.

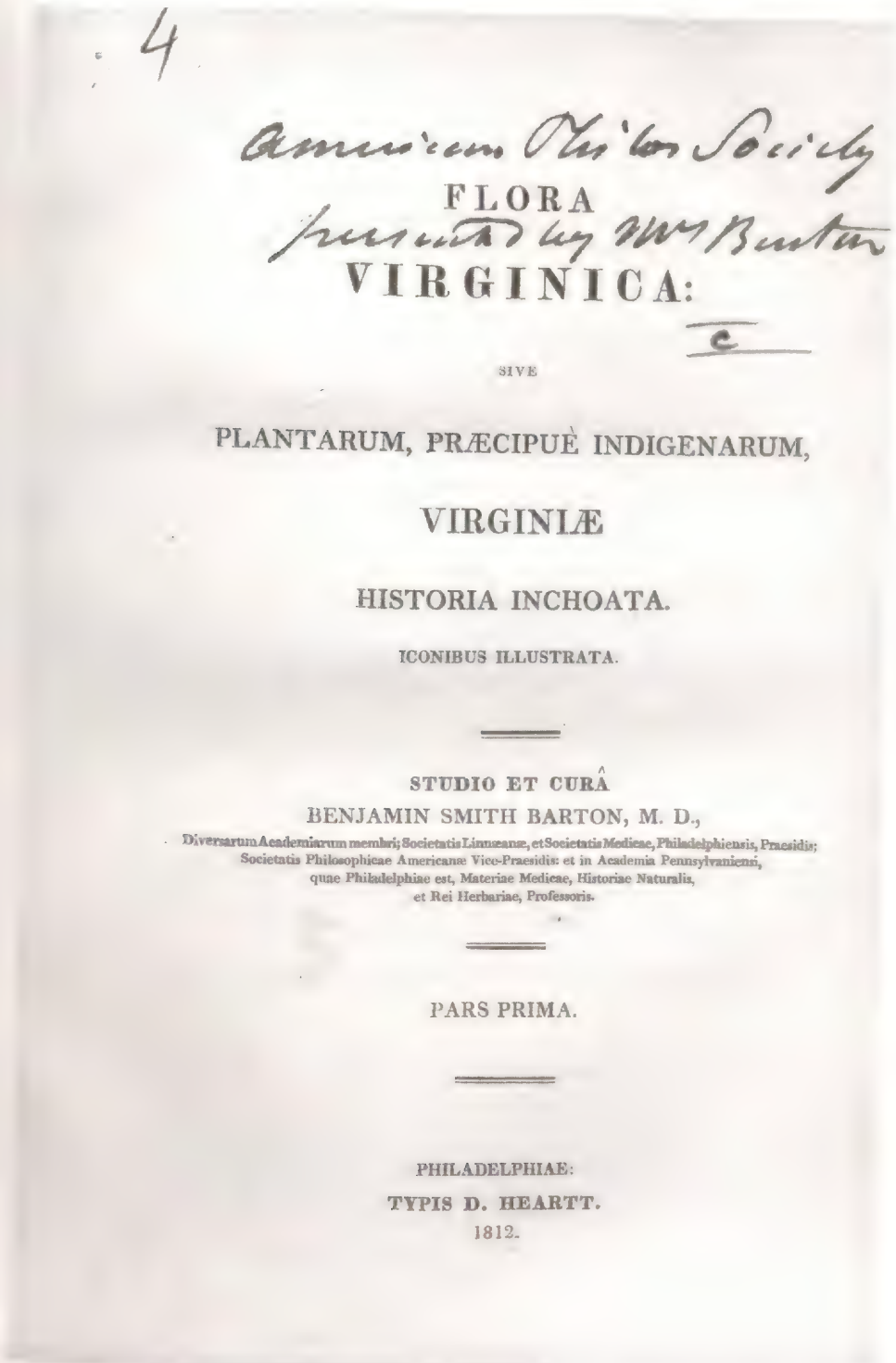
Culley's Observations on Live Stock, 8vo.

Willich's Domestic Encyclopædia, first American edition, adapted to the present situation of the United States, with additions, by James Mease, M. D. &c.

De Necker's Elementa Botanica, 3 vols. 8vo.

Haworth's Observations on the Genus Mesembry-

Figure 43. M'Mahon's *A Catalogue of Botanical...Books for Sale* (Philadelphia, n.d.). Broadside in Barton papers, APS. Upper half only, the reverse side used by Barton as scratch memorandum; bottom half has not been recovered. Of 35 titles, five are American imprints, including two by Barton, and *Bartram's Travels*.



4

American Philosophical Society
Presented by Wm Barton

FLORA
VIRGINICA:

C

SIVE

PLANTARUM, PRÆCIPUÈ INDIGENARUM,

VIRGINIÆ

HISTORIA INCHOATA.

ICONIBUS ILLUSTRATA.

STUDIO ET CURÂ
BENJAMIN SMITH BARTON, M. D.,
Diversarum Academiarum membri; Societatis Linnæanæ, et Societatis Medicae, Philadelphiensis, Praesidis;
Societatis Philosophicae Americanæ Vice-Praesidis: et in Academia Pennsylvanicnsi,
quae Philadelphiae est, Materiae Medicae, Historiae Naturalis,
et Rei Herbariae, Professoris.

PARS PRIMA.

PHILADELPHIAE:
TYPIS D. HEARTT.
1812.

Figure 44. Title page of Barton's *Flora Virginica*. Copy at APS, received in 1816. Handwriting is that of John Vaughan, Society librarian. Barton papers, APS.

SPECIMEN

OF

A GEOGRAPHICAL VIEW

OF THE

TREES AND SHRUBS,

AND MANY OF THE

HERBACEOUS PLANTS,

OF

NORTH-AMERICA,

BETWEEN THE LATITUDES OF SEVENTY-ONE AND TWENTY-FIVE.

ILLUSTRATED BY PLATES.

BY PROFESSOR BARTON, OF PHILADELPHIA.

1809.

Figure 45. Title page of Barton's *Geographical View*. Jussieu's copy, the only one known, at Yale University Medical School Library. Courtesy of Yale University, Harvey Cushing/John Hay Whitney Medical Library.

PROPOSALS

FOR PRINTING, BY SUBSCRIPTION,

AN

HISTORICAL AND PHILOSOPHICAL

INQUIRY

INTO THE

ORIGINAL, NATURE, AND DESIGN

OF VARIOUS

REMAINS OF ANTIQUITY,

WHICH HAVE BEEN DISCOVERED IN

AMERICA:

TOGETHER WITH OBSERVATIONS ON THE MIGRATIONS, THE POPULOUSNESS, THE GENIUS, THE RELIGIONS, AND ARTS OF THE ANCIENT INHABITANTS OF THIS CONTINENT.

ILLUSTRATED WITH A LARGE MAP, AND SEVERAL OTHER PLATES.

BY BENJAMIN SMITH BARTON, M. D.

Corresponding Member of the Society of the Antiquaries of Scotland; Member of the American Philosophical Society, held at Philadelphia, for promoting Useful Knowledge, — and Professor of Natural History and Botany, in the College of Philadelphia.

CONDITIONS.

I. THIS work will be published in one large volume, octavo, printed on a handsome paper and a neat letter: — the price to subscribers will be two Spanish milled dollars, in boards. No part of this sum is required to be paid till the delivery of the work.

II. The work will be put to the press so soon as three hundred copies shall be subscribed for, and will, probably, be delivered to the subscribers sometime in the course of next December.

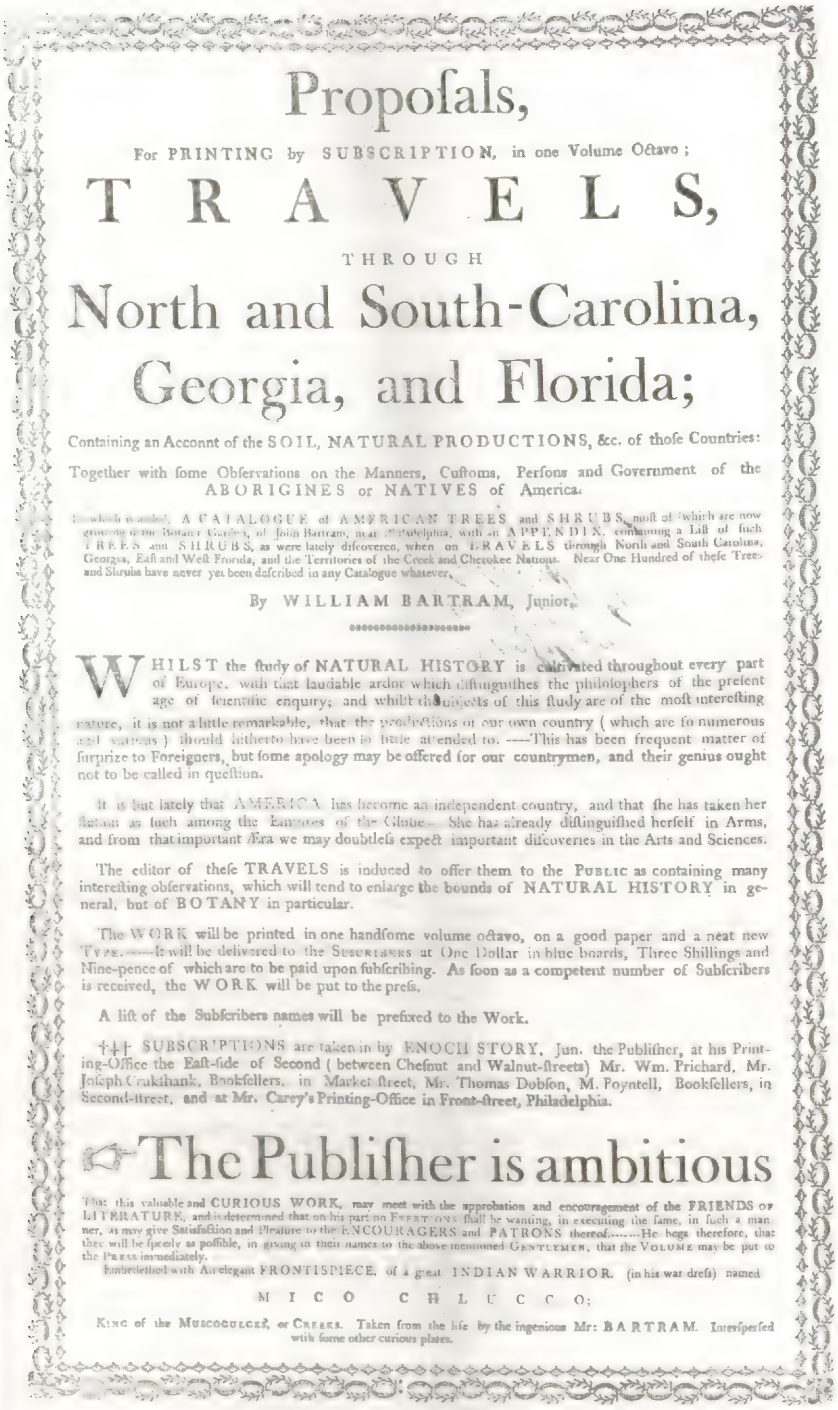
III. A list of the names of the subscribers will be prefixed to the work.

SUBSCRIPTIONS will be received by Messrs. Prichard and Hall, Mr. C. Cist, Mr. T. Dobson, Mr. W. Spotswood, Mr. T. Seddon, Messrs. Aitken & Son, and by the other book-sellers in Philadelphia; by Messrs. Berry and Rogers, Mr. R. Hodge, Mr. S. Campbell, Mr. T. Allen, and Mr. T. Greenleaf, in New-York; by Messrs. Isaiah Thomas and Co. in Boston; by Mr. Josiah Meigs, in New-Haven; and by most of the principal book-sellers in the United-States.

Philadelphia, December 22d, 1789.

Not in Evans

Figure 46. Barton's *Proposals for his Inquiry into the...Remains of Antiquity*. Broadside (7 1/2 × 10 1/4 inches). Discouraged by his youthful inaccuracies in his *Observations*, Barton projected this one-volume octavo, a map and plates. Publication was to commence with three hundred subscribers, but failed.



Propoſals,

For PRINTING by SUBSCRIPTION, in one Volume Octavo;

TRAVELS,

THROUGH

North and South-Carolina, Georgia, and Florida;

Containing an Account of the SOIL, NATURAL PRODUCTIONS, &c. of thoſe Countries:

Together with ſome Obſervations on the Manners, Cuſtoms, Perſons and Government of the ABORIGINES or NATIVES of America.

In which is added, A CATALOGUE of AMERICAN TREES and SHRUBS, moſt of which are now growing in the Botanic Garden, of John Bartram, near Philadelphia, with an APPENDIX, containing a Liſt of ſuch TREES and SHRUBS, as were lately diſcovered, when on TRAVELS through North and South Carolina, Georgia, Eaſt and Weſt Florida, and the Territories of the Creek and Cherokee Nations. Near One Hundred of theſe Trees and Shrubs have never yet been deſcribed in any Catalogue whatever.

By WILLIAM BARTRAM, Junior.

WHILST the ſtudy of NATURAL HISTORY is cultivated throughout every part of Europe, with that laudable ardor which diſtinguiſhes the philoſophers of the preſent age of ſcientific enquiry; and whilſt the objects of this ſtudy are of the moſt intereſting nature, it is not a little remarkable, that the productions of our own country (which are ſo numerous and various) ſhould hitherto have been ſo little attended to. ----This has been frequent matter of ſurprize to Foreigners, but ſome apology may be offered for our countrymen, and their genius ought not to be called in queſtion.

It is but lately that AMERICA has become an independent country, and that ſhe has taken her ſtation as ſuch among the Empires of the Globe.—She has already diſtinguiſhed herſelf in Arms, and from that important Æra we may doubtleſs expect important diſcoveries in the Arts and Sciences.

The editor of theſe TRAVELS is induced to offer them to the PUBLIC as containing many intereſting obſervations, which will tend to enlarge the bounds of NATURAL HISTORY in general, but of BOTANY in particular.

The WORK will be printed in one handſome volume octavo, on a good paper and a neat new TYPE.——It will be delivered to the SUBSCRIBERS at One Dollar in blue boards, Three Shillings and Nine-pence of which are to be paid upon ſubſcribing. As ſoon as a competent number of Subſcribers is received, the WORK will be put to the preſs.

A liſt of the Subſcribers names will be prefixed to the Work.

††† SUBSCRIPTIONS are taken in by ENOCH STORY, Jun. the Publiſher, at his Printing-Office the Eaſt-ſide of Second (between Cheſnut and Walnut-ſtreets) Mr. Wm. Prichard, Mr. Joſeph Crukſhank, Booksellers, in Market-ſtreet, Mr. Thomas Dobſon, M. Poyntell, Booksellers, in Second-ſtreet, and at Mr. Carey's Printing-Office in Front-ſtreet, Philadelphia.

☞The Publiſher is ambitious

That this valuable and CURIOUS WORK, may meet with the approbation and encouragement of the FRIENDS of LITERATURE, and is determined that on his part no EXERTIONS ſhall be wanting, in executing the ſame, in ſuch a manner, as may give Satisfaction and Pleaſure to the ENCOURAGERS and PATRONS thereof.....He begs therefore, that they will be ſpeedy as poſſible, in giving in their names to the above mentioned GENTLEMEN, that the VOLUME may be put to the PRESS immediately.

Embelliſhed with An elegant FRONTISPIECE, of a great INDIAN WARRIOR. (in his war dreſs) named

M I C O C H L U C C O;

KING of the MUSCOGULGES, or CREEKS. Taken from the life by the ingenious Mr: BARTRAM. Interſperſed with ſome other curious plates.

Figure 47. *Propoſals* for William Bartram's *Travels*, undated. Broadside, enclosed in an undated letter probably 1786 from Enoch Story, Jr., to Benjamin Franklin (Franklin Papers vol. 76, fig. 36, APS). "The meager information we have concerning Enoch Story, Jr., is somewhat conflicting" (Harper, *Propoſals*, 29 and fig. 1).

Figure 48. Long-tailed weasel [*Mustela frenata*]. Brown ink drawing (8 × 13 inches) by William Bartram. Barton papers, APS. Though undated, this is the earliest drawing of a North American weasel by an American artist. It was intended, no doubt, for Barton's planned *Elements of Zoology*.

Figure 49. Bristly sarsaparilla, *Aralia hispida*. Undated black-and-white drawing (13 × 16 inches) by William Bartram. Barton papers, APS. "Wild elder" was probably encountered by John Bartram as early as 1743 and planted in his garden. We know that Humphry Marshall grew it in 1796. Barton observed "the hispid Aralia" in the northern mountains of Pennsylvania (*Geographical View*, 13–14).

Figure 50. Cucumber tree, *Magnolia acuminata*. Ink drawing (7 3/4 × 10 inches) by William Bartram dated 1803. Barton papers, APS. Turpin's "Magnolia acuminata" is actually *M. tripetala*, Figure 59. Did Turpin's misidentification lead Barton to arrange for this drawing? Bartram knew the tree in the wild (Harper, *Bartram's Travels*, 559).

Figure 51. Crying bird or Limpkin, *Aramus guarauna*, by William Bartram (?). Publication of Barton's 1815 paper on the Limpkin in *Trans. Linn. Soc. London* 12 (1818): 24–27, pl. 1, was delayed. The drawing alleged to be Bartram's was engraved by E. S. Wedell for the Linnean Society and is not now in the Society's archives. Perhaps the Bartram drawing did not reach the Society before Barton's death and a substitute was supplied. A known Bartram drawing, reputedly of the Limpkin, but of a different bird, is described in Ewan, *Bartram*, 57, pl. 18. Courtesy of The Linnean Society of London.

Figure 52. White Buckeye, *Aesculus parviflora*. Pencil and ink drawing (13 ¼ × 19 ¼ inches) by Barton (?), without artist or date indicated. Barton papers, APS. Barton is the suggested artist for the idiosyncratic pencil stroke of leaf margin and absence of the poetic relaxed style of Bartram. Barton's mention (MS September 2, 1805) of *Aesculus parviflora* illustrates his interest in the species (Harper, *Bartram's Travels*, 430).

Figure 53. Mountain sweet Pepperbush, *Clethra acuminata*. Pencil drawing (13 × 19 inches), undated and unlabeled. Barton papers, APS. Attributed to Barton as displaying the same style as *Aesculus parviflora* (Figure 52). This fragrant arborescent shrub of the South with cream-white flowers and "intensely green and lustrous foliage" (Alice Lounsberry) was probably growing in Bartram's garden or Hamilton's "Woodlands," and drawn from a fresh cutting. Identification by the late John M. Fogg, Jr., 1977.

Figure 54. Butterfly Pea, *Clitoria mariana*. Watercolor drawing (9 × 14 inches) by Frederick Pursh, without label or date. Barton papers, APS. One of twenty-seven drawings by Pursh planned for Barton's "Flora Americana." That the stem was judiciously clipped suggests that the specimen was taken at Hamilton's "Woodlands" under restrictions. Identification thanks to Paul R. Fantz, 1982.

Figure 55. Sticky Monkey Flower, *Mimulus aurantiacus*. Watercolor drawing (14 ½ × 11 inches) by Barton, without label or date. Barton papers, APS. This endemic California relative of the garden snapdragon was first grown in the Philadelphia area either at Hamilton's "Woodlands" or in Barton's greenhouse from seed received from England. This shrub was taken on Vancouver's voyage by Alexander Menzies, almost certainly on the landfall made in San Francisco in 1794. It was first described and illustrated by Samuel Curtis in *Botanical Magazine* (1796) as pl. 354. Bernard M'Mahon listed this *Mimulus* among his "greenhouse trees and shrubs" in his *The American Gardener's Calendar* (Philadelphia, 1806), 617, but there is no evidence he had seed for sale, and *Mimulus* is not listed in *A Catalogue of American Seeds...* (Philadelphia, 180[4]). Barton's anatomical sense would have directed him to make the dissection. When the British naturalist Alfred Russel Wallace toured California in 1886 and saw the shrub in the Oakland hills, he commented that it was "a favorite in our greenhouses."

Figure 56. Antelope Bitterbrush, *Purshia tridentata*. Watercolor drawing (8 1/2 × 12 inches) by Frederick Pursh. Barton papers, APS. Presumably drawn by Pursh probably in 1807 from Meriwether Lewis specimen and intended for the Lewis and Clark account. Pursh was employed by Clark for this and other drawings taken on the expedition. Plate 15 in Pursh, *Flora*, is a smaller version.

Figure 57. Copper-colored Iris, *Iris fulva*, by Frederick Pursh. Watercolor (10 × 15 inches) signed by Pursh, Barton papers, APS. The first illustration of this *Iris*, first grown in Philadelphia about 1805. Described by Pursh in 1814, *Flora*, 30, under the synonym *Iris cuprea* from Aloysius Enslen's living collection made near New Orleans. Pursh reported "v. v." meaning that he saw the living plant, which was in Enslen's holding garden.

Figure 58. Pine-barren daisy, *Sclerolepis uniflora*. Black-and-white drawing (9 ⅝ × 14 inches) by Frederick Pursh (?), unlabeled and undated, of an unfamiliar "daisy," probably made by Pursh from fresh specimens taken at Quaker Bridge, New Jersey, in 1808. Michaux, *Flora*, pl. 42, illustrates this plant, first identified as *Ethulia uniflora* by Walter in 1788. Identification thanks to Loran C. Anderson. Barton papers, APS.

Figure 59. Umbrella Magnolia, *Magnolia tripetala*. Watercolor (9 3/4 × 15 1/4 inches) by Pierre Turpin mistakenly labeled *M. acuminata*. One of fifty Turpin watercolors made about 1802 for Barton's projected "Arboretum iconicum." Barton papers, APS. The late John M. Fogg, Jr., found Turpin's drawing "a rather poor portrait of the umbrella magnolia," but nothing to do with the Cucumber Tree *M. acuminata*, which he had been commissioned to paint. Dr. John Floyd of Louisville, Kentucky, Barton's pupil, made nineteen experiments using the fresh bark of both magnolias. Floyd mentioned Turpin's drawing, then in Barton's possession, and commented that the "nauseous odour" had made Barton "sick at the stomach." An editor of *Medical Repository* 2nd hex. 1 (1804): 427 announced that "Mr. Turpin is now actually engaged in the [task of making drawings] in Philadelphia."

A MEMOIR

CONCERNING THE

FASCINATING FACULTY

WHICH HAS BEEN

ASCRIBED TO VARIOUS SPECIES OF SERPENTS.

A NEW EDITION,

GREATLY ENLARGED, AND EMBELLISHED BY A PLATE.

BY PROFESSOR BARTON.

PHILADELPHIA:

PRINTED, FOR THE AUTHOR, BY W. BROWN.

1814.

Figure 60. Title page of Barton's "new edition" of his *Memoir concerning the Rattlesnake*. Authorship uncharacteristically brief, suggesting that the title page was composed by a person other than Barton. See Appendix I, Bibliography of Barton's Writings, no. 165; post. Courtesy of Tulane University Health Sciences Center, Rudolph Matas Medical Library.

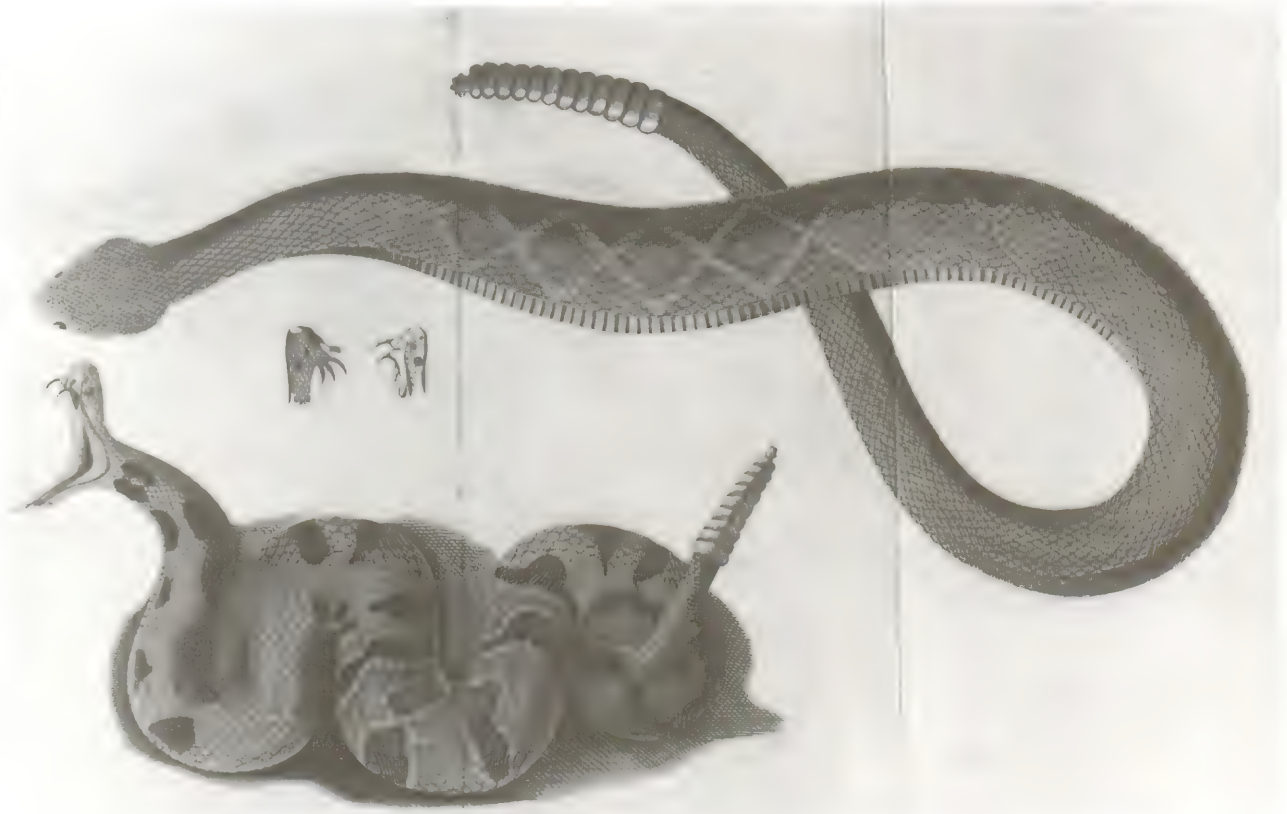


Figure 61. Rattlesnake drawings in Barton's *Memoir concerning the Rattle-snake*. Diamondback or *Crotalus adamanteus* (upper figure). Timber Rattlesnake or *C. horridus* (lower figure) of folding plate in "new edition" of the *Memoir*. Unsigned, but sculpted by Robert Scot[t] to illustrate Palisot de Beauvois's article read before the American Philosophical Society in February 1797, and published in *Trans. Amer. Philos. Soc.* 4 (1799): 362–381. Reproduced in Adler, *Early Herp.*, between pages 380 and 381. Barton papers, APS.

LE COMTE DE LACÉPÈDE
Bernard Germain Etienne De-la-ville-sur-Illon
Pair de France.
Grand Croix de l'Ordre royal de la légion d'honneur. Membre de l'Académie royale des Sciences. de la Société royale de Londres. Un des Administrateurs du Muséum d'Histoire naturelle
Lith de Villain

Figure 62. Le Comte de Lacépède by François le Villain. Barton–Lacepède correspondence extended from 1797 to 1814 (see *Post*). This French zoologist "never claimed to be seeking a 'natural system'" (Toby Appel in *Dictionary of Scientific Biography*). Systematic herpetology was left to Daubenton, Daudin, Sonnini, and others (see Harper, "Herpetological nomenclature"). For Lacépède's views on organic mutability see Richard W. Burkhardt, Jr., *The Spirit of System: Lamarck and Evolutionary Biology* (Cambridge, Mass., 1977), who offers a different portrait (p. 204). Courtesy of Smithsonian Institution, Dibner Library of the History of Science and Technology.

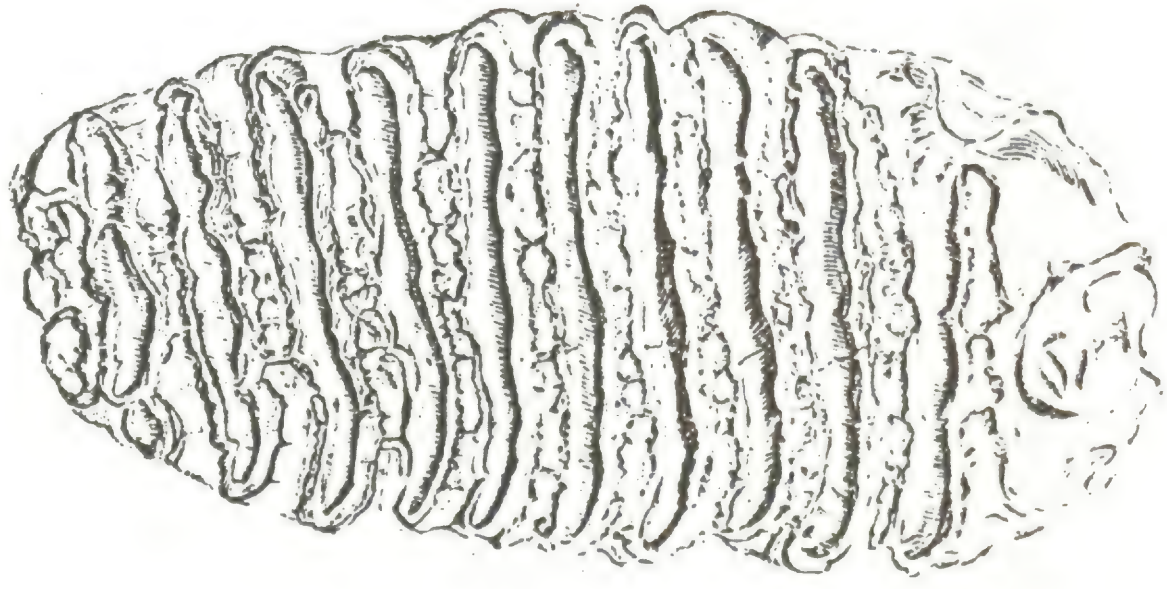


Figure 63. Cheek tooth of Mastodon or "American elephant." Pencil drawing (10 1/2 × 16 1/4 inches) by Barton (?). Barton papers, APS. Barton reported, "a large grinder of the species improperly called Mammoth, or Mammouth—the *Elephas americanus* of Cuvier [Kerr]—has lately been found, in a field, at a distance of a few miles from Chambersburgh [Franklin Co.], in Pennsylvania, and is in the Editor's possession." (*PMPJ* 2 (1805) Pt. I: 157). This drawing, the only one of five provided with a border, was perhaps intended for publication. Another ink sketch "BSB fecit June 16, 1786" (only a week before he sailed for Edinburgh) is of a fossil tooth labeled "Fig. II" among Barton papers, APS. See Samuel N. Rhoads, *The Mammals of Pennsylvania and New Jersey*...(Philadelphia, 1903), 234; Simpson, "Paleontology," 182.

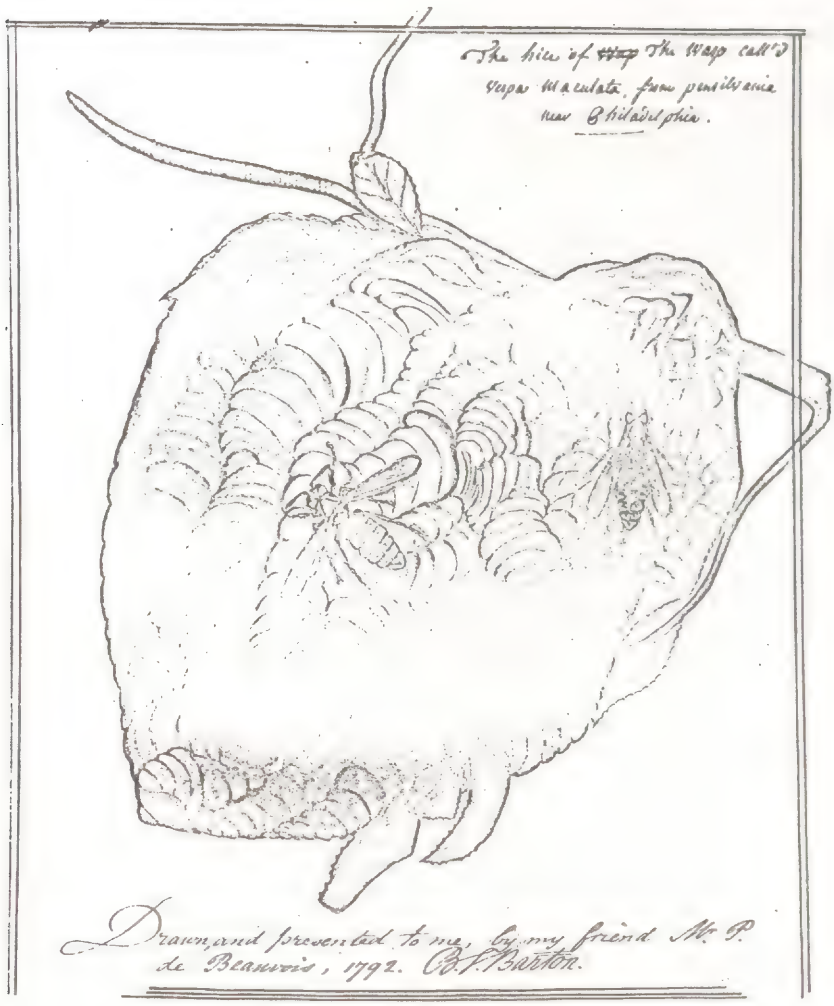

The hive of ~~Wasp~~ The Wasp called
Vespa Maculata, from pensilvania
near Philadelphia.
Drawn and presented to me, by my friend Mr. P.
de Beauvois, 1792. B.S. Barton.

Figure 64. Nest of Bald-faced Hornet, *Dolichovespula maculata*. Watercolor (7 1/4 × 9 3/4 inches) by Palisot de Beauvois. Barton papers, APS. Inscribed by the artist "the hive of the wasp called *Vespa maculata*, from Pensilvania [*sic*] near Philadelphia." In Barton's hand, "drawn, and presented to me by my friend, Mr. P. de Beauvois, 1792."

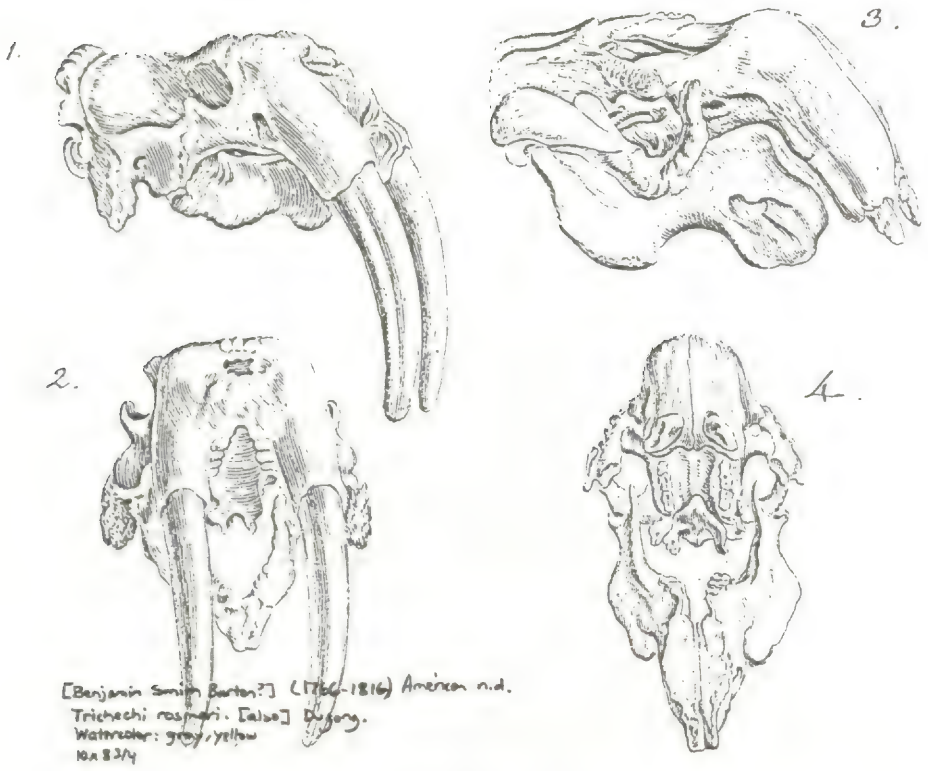


Figure 65. Skulls of walrus [*Odebenus rosmarus*] (1, 2), and dugong [*Dugong dugon*] (3, 4). Watercolor (10 × 8 ¾ inches) by Cornelius Tiebout (?). Barton papers, APS. Daryl Domning found the two *Dugong* drawings to be exact copies of the two views of the skull in Buffon and Daubenton's *Histoire Naturelle* (Paris, 1765), vol. 13, pl. 56, the earliest illustration of the dugong skull. Do these drawings relate to Barton's correspondence with Tilesius? [*Dugong dugon* was described by Lacépède in 1799 from Mueller's *Trichechus dugon*. This large aquatic mammal is related to the American Manatee, but is found in the Indian and western Pacific Oceans.]

Figure 66. Pocket Gopher. Watercolor (14 × 8 inches) by Thomas Davies. Barton papers, APS. Captioned "a kind of Rat or Mouse killed in the Indian countries of the North West. 1798." The provenance of Barton's acquisition is not known. It had been published by George Shaw, *Trans. Linn. Soc. London* 5 (1800): 227–228, pl. 8.

Figure 67. American Badger, *Taxidea taxus*. Unidentified image (16 1/2 × 13 1/2 inches), probably drawn by Barton, possibly from a trip to Ohio in 1785. Barton papers, APS. A drawing by Charles Willson Peale is discussed later. Is this the earliest drawing of the American Badger?

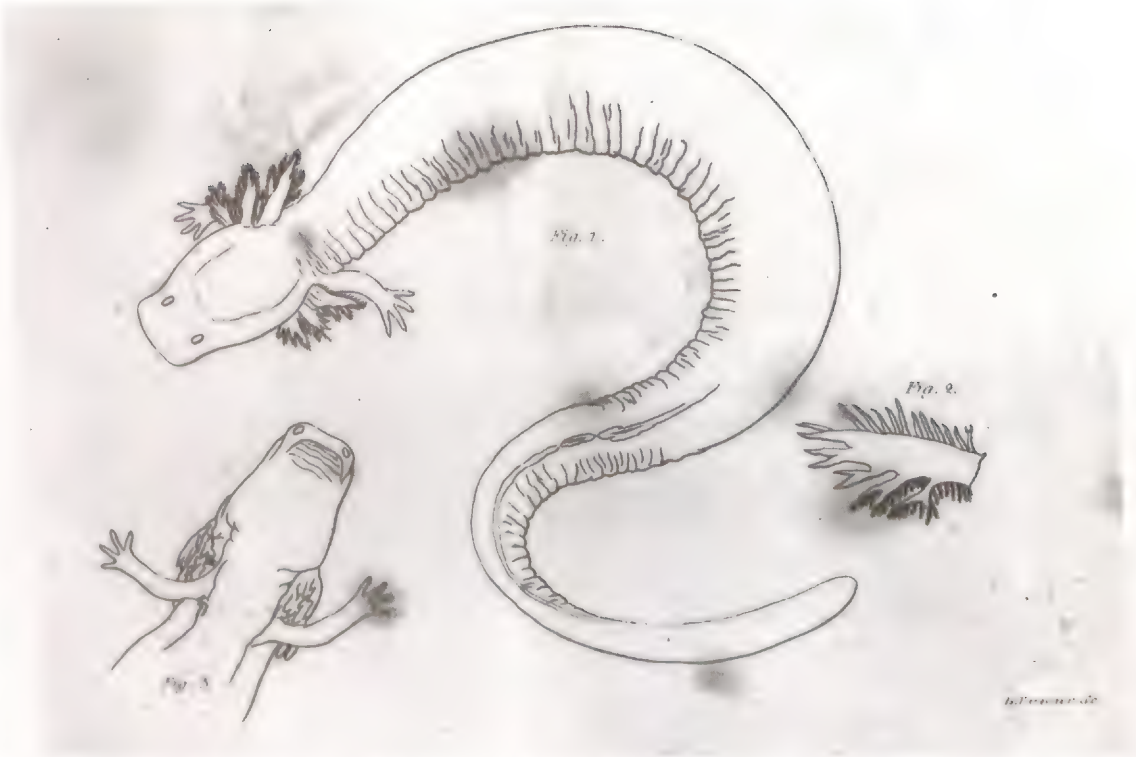


Figure 68. Greater Siren, *Siren lacertina*. Watercolor (18 × 12 ½ inches) by Barton. Barton papers, APS. This salamander "upon which I made my experiments and observations" was drawn from life. Barton reported that he drew "a bird's-eye view of the Siren, or Proteus, in act of swimming in a circular vessel of water." To a revised drawing Barton added detail of the "feather-like structures," the branchiae, on the lower right and lower left of the head and upper parts as seen from below. Barton employed Benjamin Tanner to make the engraving for publication. The copperplate survives at the APS. See Appendix I, Bibliography of Barton's Writings, no. 139, *Account of Siren lacertina*; reprinted in 1821, Bibliography of Barton's Writings, no. 172.

A

MEMOIR

CONCERNING

AN ANIMAL OF THE CLASS

OF

REPTILIA, OR AMPHIBIA,

WHICH IS KNOWN, IN THE UNITED-STATES, BY THE NAMES OF

ALLIGATOR

AND

HELL-BENDER.

BY PROFESSOR BARTON

PHILADELPHIA:

PRINTED FOR THE AUTHOR.

Griggs and Dickinson, Printers.

1812.

Figure 69. Title page of *Memoir concerning the Hell-Bender* [*Cryptobranchus alleganiensis*] differs here from Barton's usual title page in its shortened authorship. Barton papers, APS.

Figure 70. Hellbender or Tweeg, *Cryptobranchus alleganiensis*. Watercolor (9 [illegible] × 6 1/4 inches) by Barton. Barton papers, APS. Engraved by Cornelius Tiebout. This drawing, the earliest of this large salamander of Appalachian streams, exists in two states: provided with a base, a feature associated with museum exhibits, shown here; and without a base, as used in the plate in Barton's *Memoir concerning the Hell Bender*. Barton received a specimen in June 1806 from along the "river Ohio" sixty miles below Pittsburgh.

Tab. III Bufo cornutus Brasiliensis Arantango Bras. Glanca Lusitanis
Tilesius ad vis pinxit Brasiliae
d. 3. Febr. 1804.

Figure 71. Brazilian Horned Frog, *Ceratophrys aurita*. Watercolor (8 1/2 × 10 3/4 inches) by Wilhelm G. Tilesius, dated 3 Feb. 1804. Barton papers, APS. Drawn from life on the *Nadezhda* after the Krusenstern Expedition departed from the Island of Santa Catarina, south of Rio de Janeiro. Tilesius, correspondent of Barton and Wistar, described the "gehörnter Krote" in *Mag. Ges. Freunde Naturl. Berlin* 3 (1809): 83–94. This colored drawing is figure 1 of three figures of plate 3 by Tilesius. He evidently expected Barton to return the plate.

PROPOSALS

FOR PRINTING, BY SUBSCRIPTION,

ELEMENTS OF ZOOLOGY;

OR

OUTLINES OF THE NATURAL HISTORY OF ANIMALS.

BY BENJAMIN SMITH BARTON, M. D.

PROFESSOR OF MATERIA MEDICA, NATURAL HISTORY, AND BOTANY,

IN THE UNIVERSITY OF PENNSYLVANIA.

CONDITIONS, &c.

I. It is proposed to publish this work on a plan, in most respects, different from that of any other writer on the same subjects. It will embrace, 1, An outline of what is commonly called the PHILOSOPHY of ZOOLOGY; that is, the ANATOMY and PHYSIOLOGY of Animals, their MANNERS and INSTINCTS, their USES, &c.; together with, 2, SYSTEMATIC ARRANGEMENTS of animals, descriptions of the principal genera, and many of the species: also, 3, An explanation of the greater number of the TERMS that are employed by writers on *all* the branches of Zoology.

II. As the work will be the production of a native American, so it shall be the studious aim of the Author to adapt it, in an especial manner, to the lovers and cultivators of NATURAL HISTORY in the United-States. Accordingly, independently of the philosophical or physiological departments, these ELEMENTS will contain the descriptions of a great number of American Quadrupeds, Birds, Serpents, Fishes, Insects, Vermes, &c., not a few of which have never yet been (publicly) described by any naturalist.

III. The work being intended as a companion for the Author's *Elements of Botany*, published in 1803, it will, like that work, be printed in an octavo form, of the Royal size; on a good paper, and a new type.

IV. For the convenience of the purchasers, the work will be printed in two volumes, each of which is to contain, at least, 256 pages, exclusive of an Index.

V. It will be illustrated by a few (not less than ten) necessary plates, engraven by eminent artists, both in America and in Europe.

VI. The price of the work (in boards) will be five dollars to SUBSCRIBERS, to be paid on the delivery of the volumes. To non-subscribers, the work cannot be afforded at this price.

VII. So soon as three hundred copies shall be subscribed for, the work will be put to press; and the first volume will be published in a short time after. By far the greater part of the materials (the Author's public lectures, &c.), from which the work is to be compiled, are already collected, and will easily be distributed into order.

Philadelphia, October 14th, 1806.

Figure 72. Barton's *Proposals for Elements of Zoology*. Broadside (7 1/2 × 10 1/4 inches). Barton papers, APS. Encouraged by the success of his *Elements*, Barton projected a companion textbook, also in two volumes, and illustrated with engraved plates. He reported thirteen "good" subscribers by March 1807, and about forty more, but not enough to proceed with publication.

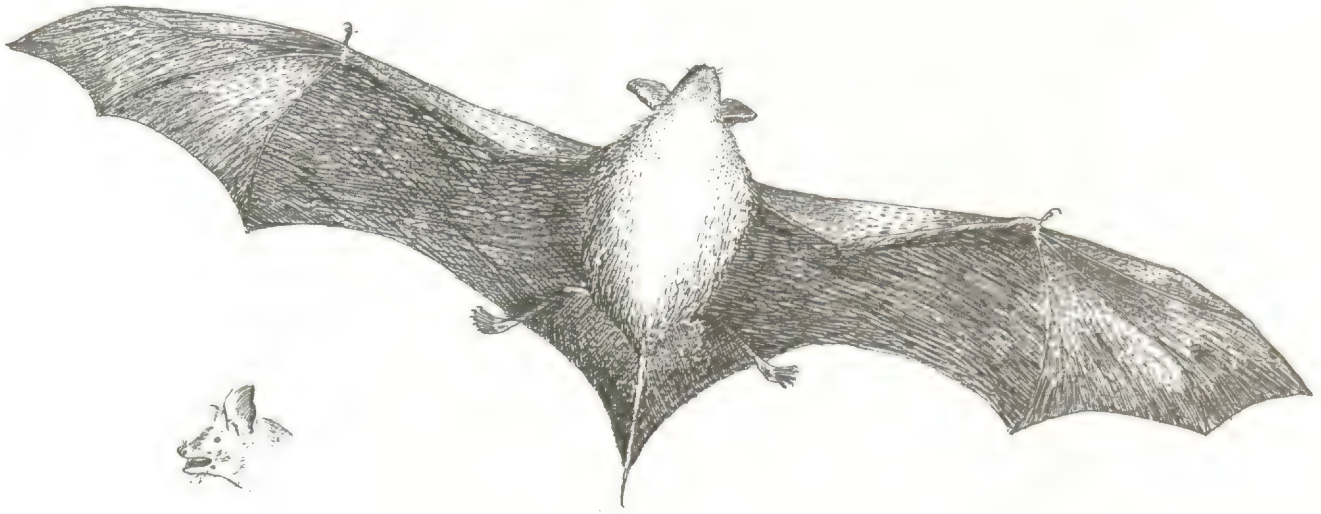


Figure 73. "Leatherwing Bat." Unlabeled, undated ink drawing (8 × 11 inches) by William Bartram. Barton papers, APS. Barton may have referred to this early bat drawing when he noted "The large bat of which [Bartram] gave me a drawing is called in Carolina the Leather-wing Bat...[Bartram] says it has become much more common about Philadelphia than formerly, and that the other kind has become more rare." If drawn less than life size, from limitation of paper, Bartram's drawing may illustrate the Big Brown Bat, *Eptesicus fuscus*. If drawn for size, Alfred L. Gardner suggests either Little Brown Bat, *Myotis lucifugus*, Eastern Pipistrelle, *Pipistrellus subflavus*, or, most likely, the Evening Bat, *Nycticeius humeralis*.

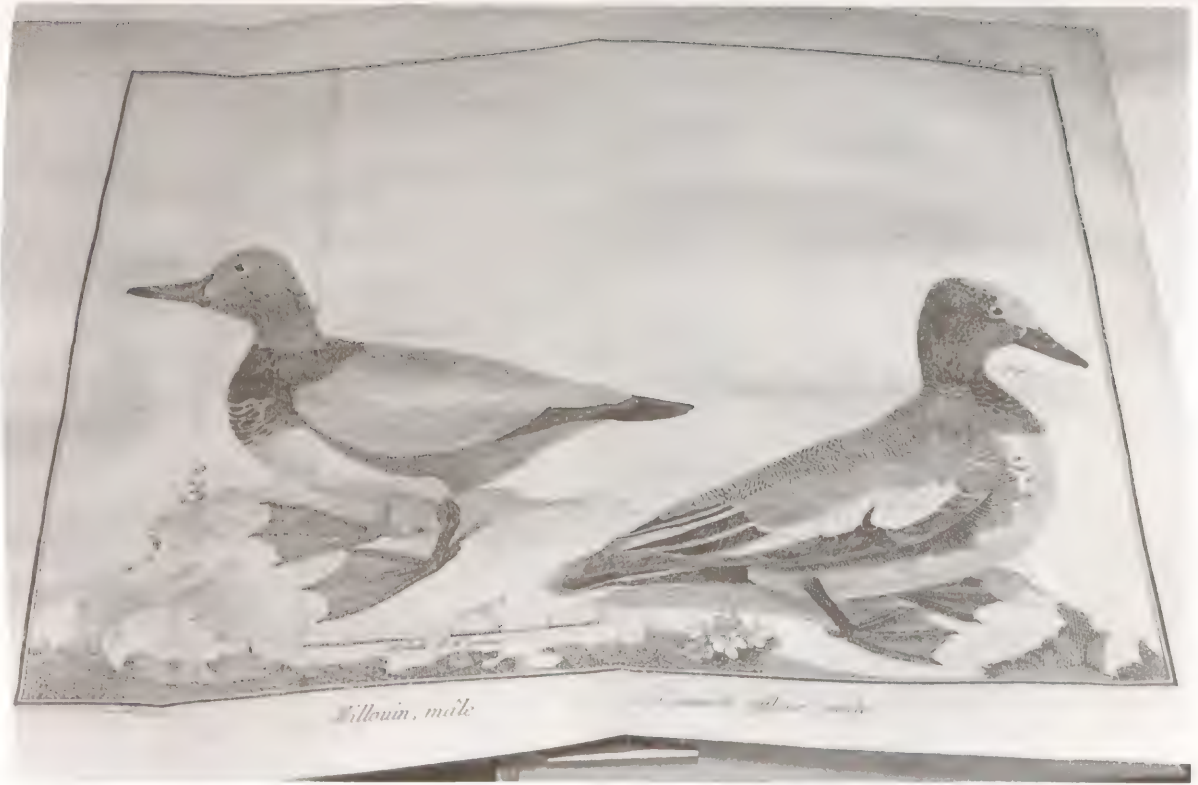


Figure 74. Brisson's plate of the American Canvasback Duck, now *Aythya valisineria* (left), and the European Pochard Duck, now *Aythya ferina* (right), to answer "Ratenesk." Barton's copy, Pennsylvania Hospital, of Mathurin Jacques Brisson, ***Ornithologie, ou Méthode contenant la division des oiseaux en ordres...*** (Paris, 1760) vol. 6, pl. XXXV. Barton's interest in circumpolar genera was demonstrated when, according to his memorandum, he opened the book to answer Rafinesque's question on the differences in the two ducks. Courtesy Pennsylvania Hospital Historic Collections, Philadelphia.

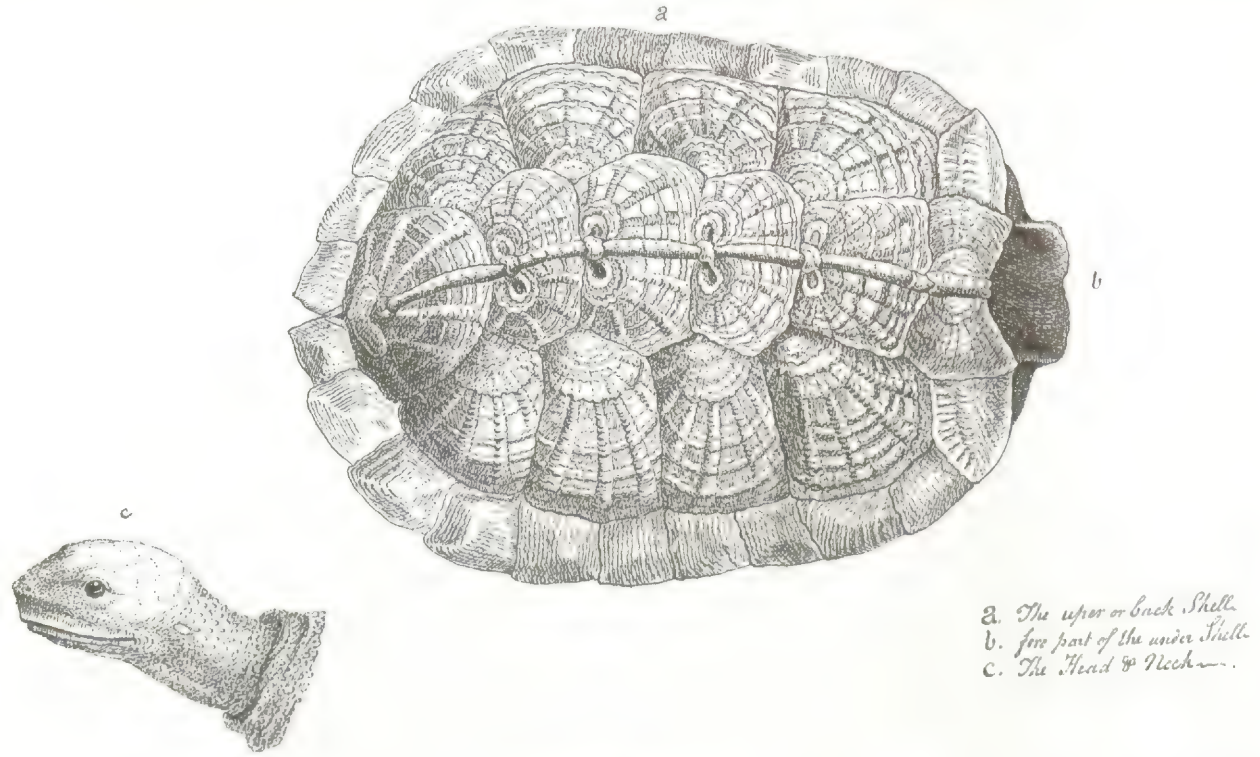


Figure 75. Wood Turtle, *Clemmys insculpta* LeConte [now referred to *Glyptemys insculpta*]. Ink drawing (18 1/4 × 8 1/4 inches) by William Bartram. Barton papers, APS. Bartram wrote Barton 11 January 1793 that he was sending him drawings of the "Snake Bird" [*Anhinga anhinga*], "our weasel" [*Mustela*], and "Testudo caelata" (Barton papers, Pennsylvania Historical Society, Philadelphia). This last Latin name denotes the engraved carapace, alluded to in LeConte's name for the Wood Turtle. Bartram evidently was aware that the turtle was undescribed, since he provided a 19-line description on the verso of his drawing. Harold Dundee confirmed the identification.

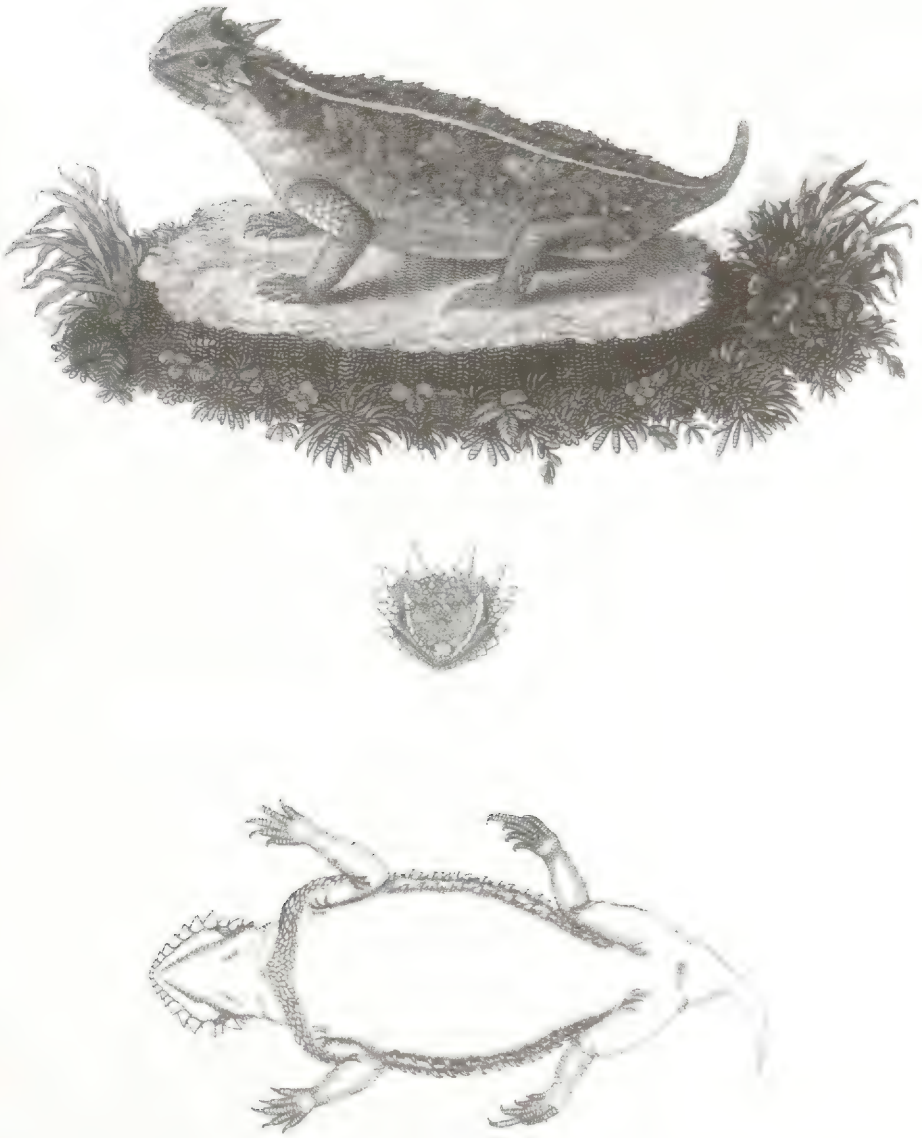


Figure 76. Horned Lizard, *Phrynosoma cornutum*. Ink drawing. Barton papers, APS. Original copper plate engraved by Lawson is at Academy of Natural Sciences, Philadelphia. A live specimen was exhibited at Peale's Museum. On its death it was eviscerated, made into a systematic exhibit with the leash in place, and drawn by C. W. Peale. Peale's specimen was probably the model for drawings by Christofe Rieder, or less likely by Pietro Ancora, for Barton's intended publication.

Figure 77. Skunk Cabbage, *Symplocarpus foetidus*. Watercolor (9 3/4 × 15 inches) by Turpin. Barton papers, APS. A "clumpfoot-cabbage" certainly freshly collected in the Philadelphia precincts. This unpublished Skunk Cabbage drawing was the first made in the United States. In 1817, W. P. C. Barton further described the "Narrow-spathed Skunk-cabbage," *"Symplocarpus var. 3 angustispatha,"* not recognized today, and illustrated both forms with hand-colored plates of his own in his *Vegetable Materia Medica* of the United States; or *Medical Botany* (Philadelphia, 1817–1819, 2 vols.), plates 10 and 11. His "new species [variety]" had been growing "in the meadows a quarter or half a mile east of the botanic garden ground of the University of Pennsylvania."

Figure 78. Floret of Thistle, *Echinops.* Watercolor (9 3/4 × 15 inches) by Turpin. Barton papers, APS. John Curtis of Williamsburg mentions growing this Old World garden plant in his letterbook of 1738 in E. G. Swem, *Proc. Amer. Antiq. Soc.* 58 (1948): 71. M'Mahon listed the Globe Thistle *Echinops sphaerocephalus* in *The American Gardener's Calendar* (Philadelphia, 1806), 602. Barton probably obtained this garden-grown novelty from Hamilton's "Woodlands" for his artist. Arthur Cronquist provided the generic determination.

Figure 79. Twin-leaf, *Jeffersonia diphylla*. Watercolor (8 × 13 inches) by Turpin. Barton papers, APS. The drawing dates from about 1804, certainly from a fresh local gathering, and is notable for its dissections. Barton's own earlier drawing illustrated an older plant in capsule (*Trans. Amer. Philos. Soc.* 3 (1793): 334). After John Lyon reintroduced Twin-leaf to English gardens and it was illustrated in *Bot. Mag.* (1812): pl. 1513, Sydenham Edwards quipped, "Dr. Barton imposed the name '*Jeffersonia*.'"

Figure 80. Swamp Pink, *Helonias bullata*. Watercolor (8 × 14 inches) by Turpin. Barton papers, APS. This member of the Lily family was certainly drawn about 1804, probably from a living pine barren specimen. Kalm collected *Helonias* in 1749–1750 in the Parish of Pennsneck, near the Delaware River, Salem Co., New Jersey, and his specimen is the type, though Linnaeus, *Species Plantarum*, 342, wrongly credited "Pennsylvania" as its origin (Witmer Stone, *Plants of Southern New Jersey...* (Trenton, N.J., 1911 [1912], 63)). Incidentally, Banister's drawing reproduced in Plukenet and cited by Linnaeus is not *Helonias* but Walter's *Aletris aurea* (Ewan & Ewan, *Banister*, 229), the Golden Colicroot.

Figure 81. Silverbell Tree, *Halesia carolina*. Ink drawing (8 · 13 inches) by Turpin. Barton papers. APS. John Lyon took particular interest in *Halesia* (Ewan, "Lyon," 69, fn. 101), and this drawing may possibly have been made from a Lyon specimen growing in his holding garden in Philadelphia in 1803. Mark Catesby had illustrated *Halesia carolina* in 1731 in his *Natural History*, 1: 64. Barton followed Michaux, who adopted the name *Halesia tetraptera* Ellis for the Mountain Silverbell for his *Flora*, 1: 40 [C. E. Wood, Jr., *J. Arnold Arbor.* 41 (1960): 29].

Figure 82. Columbine, *Aquilegia canadensis*. Watercolor (8 × 13 inches) by Turpin. Barton papers, APS. A portion of this unpublished drawing (the upper left single flower, and flower parts) was incorporated by Barton in his *Elements*, Plate 34, to illustrate the Linnaean "Class XIII Polyandria pentagynia."

Figure 83. Pawpaw, *Asimina triloba*. Watercolor (14 × 8 1/2 inches) by Turpin. Barton papers, APS. John Bartram sent fruits in a "jar" to "friend Catesby," and they reached him in 1739. Catesby illustrated the fruit in his *Natural History*, 1: pl. 85. When Linnaeus described the Pawpaw in 1753 in *Species Plantarum*, Catesby's plate served as the iconotype for *Annona triloba*, a basionym for *Asimina*; see Ewan, p. 98, note, in Beehive Press edition of Catesby's *Natural History*.

Figure 84. Fire Pink, *Silene virginica*. Watercolor (11 1/2 × 18 inches) by Turpin. Barton papers, APS. Barton planned to illustrate *Silene virginica* in his unpublished "Decades of American Materia Medica." He mentioned a root decoction as a "native antihelmintic" [*sic*, antihelminthic] suggested by his Virginia correspondent, James Greenway, in *Collections*, 41. Iconography of Fire Pink began about 1689 when John Banister sent to Martin Lister in England his drawing of what he called "Muscipula regia [or] Lychnis viscosa flore amplo coccineo." Banister's drawing survives in the British Museum, see Ewan & Ewan, *Banister*, fig. 20, and account, 214. In 1736 Catesby, in his *Natural History*, 2: 54, illustrated *Silene* with a withered shoot of Fire Pink.

Figure 85. Wake Robin or Snow Trillium, *Trillium grandiflorum*. Pencil and watercolor (11 × 16 1/2 inches) by Turpin. Barton papers, APS. Before Michaux described this large-flowered *Trillium* as *T. rhomboideum* var. *grandiflorum* in 1803, and before it was first illustrated by Richard Salisbury in England in June 1805, it had been grown in the precincts of Philadelphia. The source of Turpin's drawing is not recorded but may have been Bartram's garden, since it is native in western Pennsylvania, where the Bartrams could have found it. Francis Masson (1741–1805) gathered seed of this *Trillium* in "upper Canada," probably in the vicinity of Montreal. He certainly sent seed to Kew. James Lee, 1803, of Hamersmith was a British outlet. Michaux, *Flora*, 1: 216, 1803; Salisbury, *The Paradisus Londonensis* (London, 1805–1808), 2 vols. 1: pl. 1; *Bot. Mag.* 22 (1805): pl. 855; J. Britten, *J. Bot.* 22 (1884): 114–123; Ewan, *Pursh Flora*, 21.

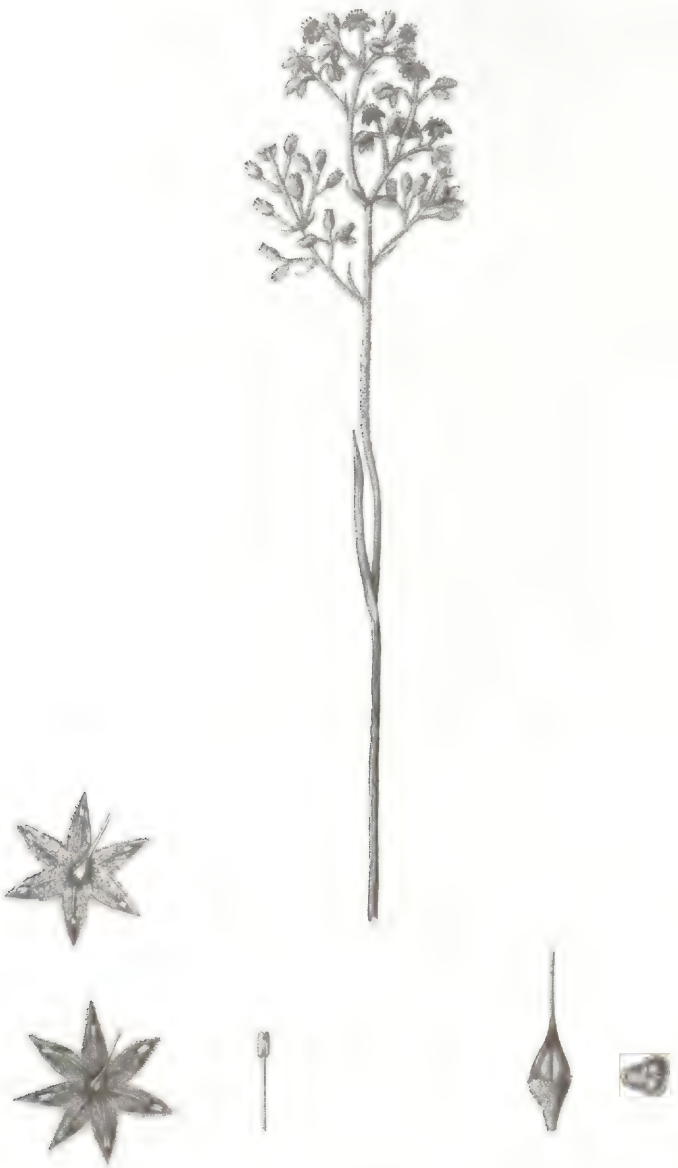


Figure 86. Goldencrest, *Lophiola aurea*. Watercolor (11 1/2 × 18 1/2 inches) by Pursh (?). Barton papers, APS. This drawing is the earliest known and relates to Pursh's statement that he discovered *Conostylis*, now *Lophiola*, "about 1805." This plant of the "heart of the pine barrens," likely was collected at Quaker Bridge, New Jersey, in 1808, on the excursion when Pursh took *Narthecium americanum*. The history of the plant is detailed in Ewan, "Lyon," 57. Although the text of *Bot. Mag.* (Nov. 1, 1813), pl. 1596, mentions Lyon's introduction of 1812, it does not appear in his sales list. The *Bot. Mag.* drawing by Sydenham Edwards is a close match for plate 6 of Pursh, *Flora*, by William Hooker. "Pursh catal." has never come to light.

Figure 87. Floating Heart, *Nymphoides aquatica*. Watercolor (10 3/4 × 14 3/4 inches) by Barton (?). Barton papers, APS. Formerly known as far north as Bridgeton, New Jersey, this southern aquatic may have been growing in Barton's time as a prized possession at Hamilton's "Woodlands." This is the earliest known drawing. Mrs. Ellis Rowan illustrated the plant, a relative of the Bogbean, *Menyanthes trifoliata*, in Alice Lounsberry's *Southern Wild Flowers and Trees* (New York, 1901), pl. 144.

Figure 88. *Rhododendron punctatum* of Henry Charles Andrews. Ink and watercolor (7 × 10 inches) by William Bartram, signed "WB. Del. 1801." Barton papers, APS. This is an instance of the lively contest among plant explorers and their comrades, the nurserymen. William Bartram, who evidently first distinguished this smaller "laurel" from the great "Rose Bay," *Rhododendron maximum*, had mentioned "a new species of Rhododendron" in his *Travels*, 336. In 1792 John Fraser introduced this dotted-leaved evergreen species at his nursery on Kings Road, Chelsea. That same year Fraser's competitor, André Michaux, introduced it to Paris gardens through François Cels. Michaux described the species *Rhododendron minus* in 1803, *Flora*. 1: 258; and Étienne Ventenat illustrated this in his *Choix de Plantes* (Paris, 1803–1808), pl. 15. See Andrews, *Bot. Repos.* in *TL-2* (1798), pl. 36; Harper, *Bartram's Travels*, 612.

Figure 89. Chinese Trumpet Creeper, *Campsis grandiflora*, this vine was first described by Thunberg as *Bignonia grandiflora* in 1784. Unlabeled ink and watercolor (17 × 12 inches) by Barton. Barton papers, APS. A puzzling plant, probably growing in Hamilton's "Woodlands" since we know he was growing plants obtained from Roxburgh in India as early as 1799. The Sino-American distribution pattern shared by *Campsis* adds credence to this identification. See Ewan, "Barton's greenhouse," 129, where Figure 3 is mistakenly interchanged with Figure 1 for captions.

Figure 90. Ebony Spleenwort. *Asplenium platyneuron*. Watercolor (9 × 14 inches) by Barton. Barton papers, APS. Labeled "Asplenium. Schuulkill, July 1809." The delicate attention to the roots is typical of Barton, but that the drawing is dated is exceptional.

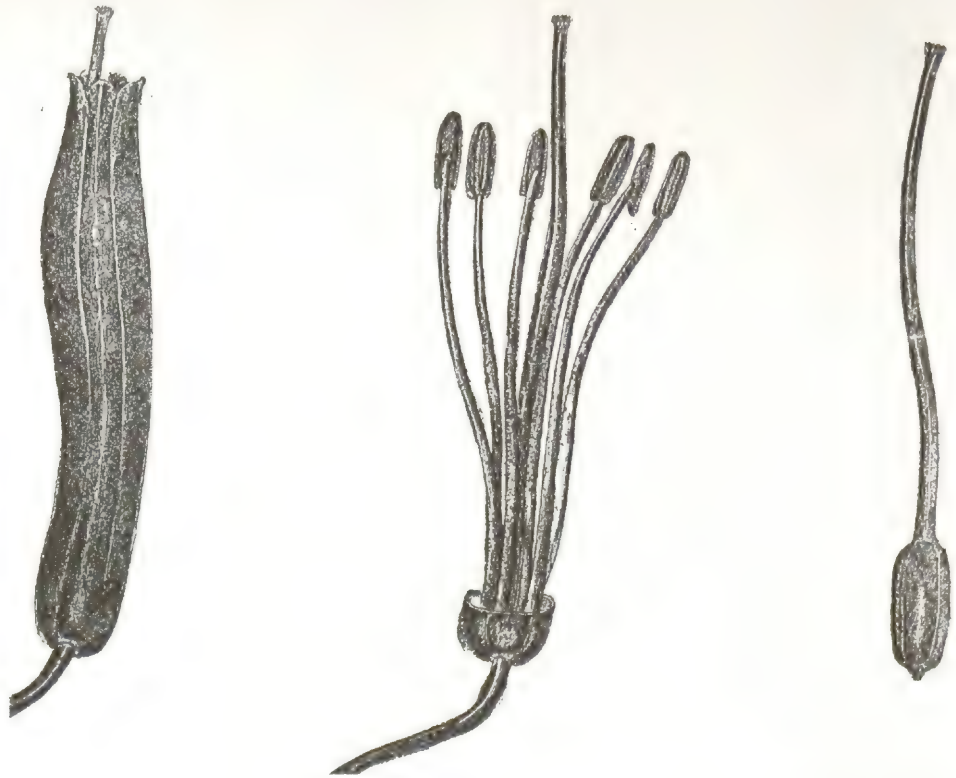


Figure 91. Aloe, *Aloe variegata*. Watercolor (18 1/2 × 11 1/2 inches) by Barton. Barton papers, APS. Drawn probably from a plant in William Hamilton's greenhouse. Barton's anatomical interest in floral structure is seen in the few flowers, which Hamilton guardedly shared. Barton listed three aloes in his *Cullen's Treatise*, including *Aloe barbadensis*, a principal source of medicinal aloe. M'Mahon listed *A. variegata* in his *American Gardener's Calendar* (1806), 622. †Robert Orndulff's assistance in identification is appreciated.

Figure 92. Canada Lily, *Lilium canadense* var. *editorum*. Watercolor (11 1/2 × 6 1/4 inches) by Barton (?). Barton papers, APS. "Every feature of the lily fits *Lilium canadense*," wrote Edgar T. Wherry, 30 July 1973, adding "highly significant are the spreading non-relaxed tepals and the short anthers." He pointed out that the typical *Lilium canadense* has narrow leaves and light-colored flowers, whereas Fernald's upland plant, var. *editorum*, has short broad leaves and deep-hued flowers. The typical variety is "common through the Philadelphia region wherever the hand of man has not set foot too heavily." In Wherry's words "the drawing corresponds better to var. *editorum*, and the [drawing] may have been made from a former colony of this, or from a plant, which, because of its distinctive coloring, had been brought to one of the local gardens from somewhat further west."

Figure 93. Purple Fritillary, *Fritillaria lanceolata* (right), and Yellow Fritillary, *F. pudica* (left). Watercolor (14 × 21 1/4 inches) by Pursh. Barton papers, APS. Two kinds of fritillary were first collected on the Lewis and Clark Expedition and described by Pursh. Barton planned to publish and illustrate these novelties, and Pursh was employed by Lewis in 1807 to that end. Later Pursh redrew the Yellow Fritillary for his 1813 *Flora*, listed there as *Lilium pudicum*, with the herbarium specimen as model.

Figure 94. Bottle Gentian, *Gentiana andrewsii*. Watercolor (8 × 13 inches) by Matthias Barton. Barton papers, APS. The only botanical drawing by Matthias Barton that has been located. He wrote on the verso of this undated drawing, probably made about 1806, "I send you a rough unfinished drawing of a Plant which I found on the Bank of our Creek, Connistoga, a few days since. Yet it is accurate, I have Not at this Time any Thing to send you worthy of Notice." See *Discourse*, 30, on fish drawings for Barton by Matthias.

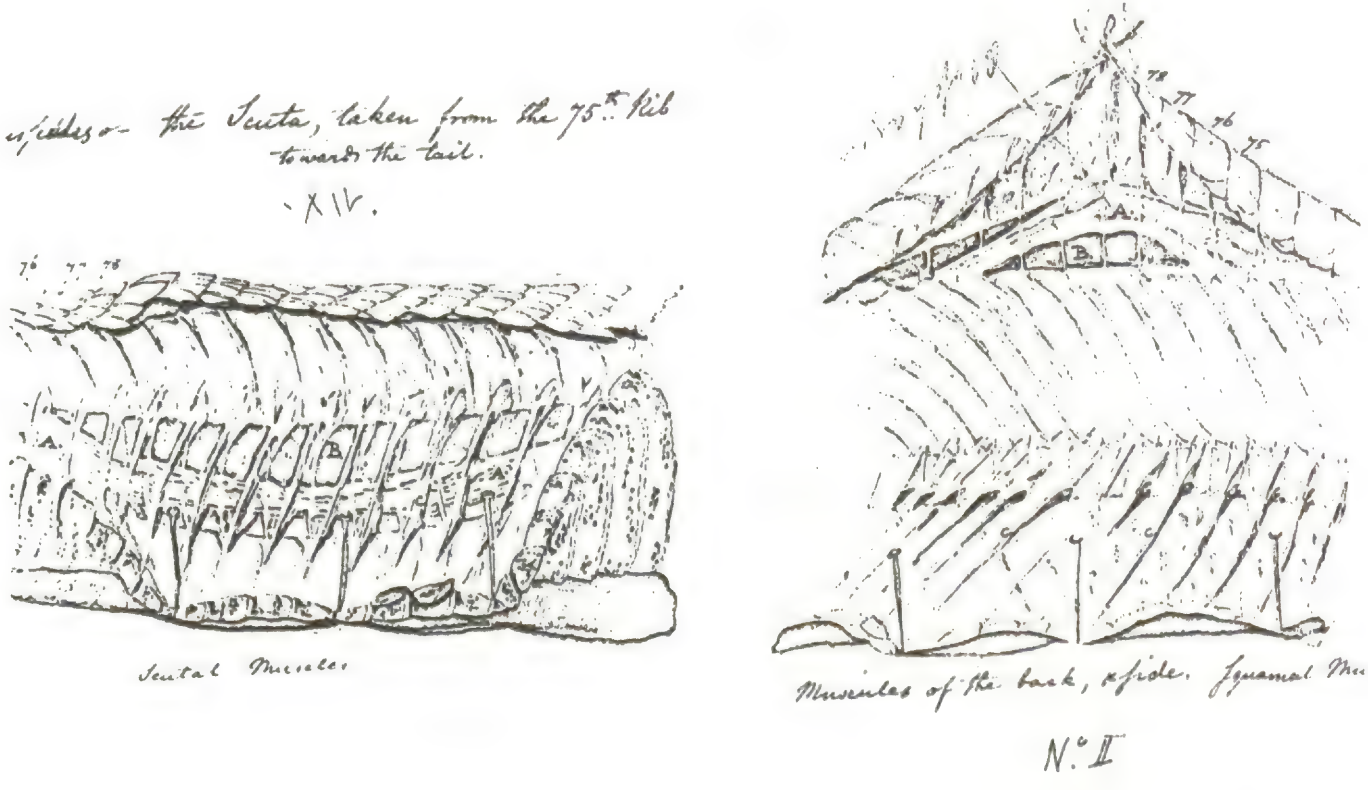


Figure 95. Musculature of the rattlesnake *Crotalus*. Watercolor (13 1/2 × 6 1/4 inches) by Benjamin Henry Latrobe. Barton papers, APS. One of a series of twelve numbered watercolors of the anatomy of the rattlesnake, done between 1799 and 1803, and labeled in Latrobe's hand. See brochure *Friends of the* [American Philosophical Society] *Library* (Philadelphia, September 1982), 6–7. "Muscles of the Scuta, taken from the 75th rib towards the tail," labeled "scutal muscles" and "muscles of the back & side. Squamal muscules." Klauber, *Rattlesnakes*, does not mention anatomical drawings.

Index of Flora

The following index consists of scientific names confirmed in modern usage, and their synonymous names are included if mentioned herein. This index is is not intended to be a comprehensive nomenclature, but rather a guide to names. Synonyms often reflect the original or older names as would have been used by Barton and his contemporaries. Since scientific names change as our understanding of these plant taxa does, it is useful to have their modern equivalents. Common names are also included in this index. The describing author and original date of publication are included for those scientific names that could be verified.

Key for index:

Bold italic type	Valid scientific name in current use
Italic type	Synonymous or older valid scientific name
Roman type	Common name, other invalid or informal scientific name, as used by Barton or others in correspondence or unpublished manuscripts.

In the index that follows, for any given taxon, its modern scientific name is listed first, followed by any synonyms or associated names, and then by common names used in the text. The floristic index consists principally of vascular plant names. A few non-vascular plants such as mosses and liverworts are included, as well as several algal and fungal names and even fossil plant taxa. This is certainly consistent with the far-ranging natural interests of Benjamin Smith Barton and other early American naturalists.

Ed. Victoria C. Hollowell

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ING. Farr, E. & G. Zijlstra, eds. 2005. Index Nominum Genericorum. USNH, Botany Dept., Smithsonian Institution, Washington, DC. http://ravenel.si.edu/botany/ing/ingForm.cfm.

IPNI. International Plant Names Index. 2005. http://www.ipni.org.

ITIS. ITIS-North America & GBIF, Global Biodiversity Information Facility. 2005. Integrated Taxonomic Information System 2005. http://www.itis.usda.gov.

LPND. Linnaean Plant Names Database 2005. The Natural History Museum, London. http://internt.nhm.ac.uk/jdsml/research-curation/projects/linnaean-typification/index.dsml.

TROPICOS. Missouri Botanical Garden. 2005. W^{3}TROPICOS, VAST (VAScular Tropicos) nomenclatural database. http://mobot.mobot.org/W3T/Search/vast.html.

A

Abies balsamea (L.) Mill., 1768 439
Pinus balsamea L., 1753 439
Balsam Fir 439
Acacia farnesiana (L.) Willd., 1806 502
Mimosa indica Pers., 1806 502
Sweet Acacia 502
Acacia, Sweet ..... (see *Acacia farnesiana*)
Acer L., 1753 ..... 299, 414, 429, 526, 582, 731
Maple ..... 51, 206, ...286, 299, 391, 429, 437, 440, 442, 731, 897
Acer rubrum L., 1753 ..... 429, 731
Red Maple 429, 731
Acer saccharinum L., 1753 526
Silver Maple 526
Acer saccharum Marshall, 1785 299
Sugar Maple 51, 206, 299, 437, 440
Acnida cannibina L., 1753 .... (see *Amaranthus cannabinus*)
Aconitum L., 1753 536
Monkshood 536
Acorus L., 1753 ..... 266, 612
Acorus calamus L., 1753 266
Sweetflag 266
Acrostichum polypodioides L., 1753 .... (see *Pleopeltis polypodioides*)
Actaea racemosa L. ..... (see *Thalictrodes racemosa*)
Adam-and-Eve Orchid ..... (see *Aplectrum hyemale*)
Adoxa moschatellina L., 1753 424
Muskroot 424
Aegopodium podagraria L., 1753 202
American Goatweed 202
Aesculus L., 1753 .... 176, 409, 426, 437, 532, 719, 868, 894
Buckeye 51, 426, 437, 439, 1025
Aesculus flava Aiton, 1789 ..... 176, 426
Yellow Buckeye 426
Aesculus glabra Willd., 1809 532
Aesculus hippocastanum L., 1753 ..... 414, 719
Horse Chestnut 414
Aesculus parviflora Walter, 1788 ....409, 426, 1025, 1026
Bottlebrush Buckeye 426
White Buckeye 409, 426, 1025, 1026
Aesculus pavia L., 1753 ..... 426, 502, 894
Red Buckeye 426
African Iridaceae ..... (see *Antholyza cunonia*)
African Rosaceae ..... (see *Cliffortia trifoliata*)
Agave americana L., 1753 985
Agave virginica L., 1753 ..... (see *Mansfreda virginica*)
Agrimonia eupatoria L., 1753 428
Church Steeples 428
Agrostis cornucopiae Sm. ex Frazer, 1786 87
Ailanthus altissima (Mill.) Swingle, 1916 276
Copal 276
Tree of Heaven 276
Aira flexuosa L., 1753 ... (see *Deschampsia flexuosa*)
Aira melicoides Michx. 1803 .... (see *Trisetum melicoides*)
Akee Tree ..... (see *Blighia sapida*)
Alder ..... (see *Betula alnus*)
Aletris aurea Walter, 1788 1053
Golden Colicroot 1053
Aletris farinosa L., 1753 503
Algae, Green ..... (see *Chara*)
Allium cepa L., 1753 424
Garden Onion 424
Allspice Bush ..... (see *Lindera benzoin*)
Aloe ..... (see *Aloe barbadensis*)
Aloe barbadensis Mill., 1768 ..... 503, 1064
Aloe 503, 1064
Aloe variegata L., 1753 1064
Aloe, False ..... (see *Mansfreda virginica*)
Alopecurus aequalis Sobol., 1799 575
Alopecurus aristulatus Michx. 575
Short-awn Meadow-foxtail Grass 575
Alopecurus aristulatus Michx., 1803 .... (see *Alopecurus aequalis*)
Alpine Saxifrage ..... (see *Saxifraga nivalis*)
Alumroot, American ..... (see *Heuchera americana*)
Amaranth, Tidal Marsh .... (see *Amaranthus cannabinus*)
Amaranthus cannabinus (L.) Sauer, 1955 .... 409, 428
Acnida cannabina L., 1753 ..... 409, 428
Tidal Marsh Amaranth 428
Amaranthus hybridus L., 1753 592
Green Pigweed 592
Amaryllis atamasca L., 1753 .... (see *Zephyranthes atamasco*)
Amelanchier Medik., 1789 ..... 588, 730
Amelanchier canadensis (L.) Medik., 1793 730
Mespilus canadensis L., 1753 730
Service Berry 730
Service Tree 730
American Alumroot ..... (see *Heuchera americana*)
American Basswood ..... (see *Tilia americana*)
American Beautybush ..... (see *Callicarpa americana*)
American Beech ..... (see *Fagus grandifolia*)
American Bittersweet ..... (see *Celastrus scandens*)
American Chestnut ..... (see *Castanea dentata*)
American Columbo ..... (see *Frasera caroliniensis*)
American Dodder ..... (see *Cuscuta americana*)
American Eel-grass ..... (see *Vallisneria americana*)
American Elm ..... (see *Ulmus americana*)
American Ginseng ..... (see *Panax quinquefolium*)
American Hornbean ..... (see *Carpinus caroliniana*)
American Larch ..... (see *Larix americana*)
American Millet ..... (see *Milium effusum*)
American Painted Cup ..... (see *Castilleja coccinea*)
American Pokeweed ..... (see *Phytolacca americana*)
American Squawroot .... (see *Conopholis americana*)
American Twinflower ..... (see *Linnaea borealis*)
Amomum Roxb., 1820 599
Greenwaya Gieske 599
Cardamom 599
Anacardium occidentale L., 1753 606
Cashew 606, 933
Anchusa villosa 598
Angelica venenosa (Greenway) Fernald, 1943 ....593, 943
Cicuta venenosa Greenway, 1793 599
Venous Angelica 593
Angelica, Venous ..... (see *Angelica venenosa*)
Anisetree ..... (see *Illicium*)
Anisetree, Florida ..... (see *Illicium floridanum*)
Anisetree, Yellow ..... (see *Illicium parviflorum*)
Antelope Bitterbrush ..... (see *Purshia tridentata*)
Antelope Horns .... (see *Asclepias asperula* var. *capricorni*)
Anthaenantia villosa (Michx.) P. Beauv., 1812 575
Phalaris villosa Michx., 1803 575
Green Silkyscale Grass 575

Antholyza cunonia L., 1753 503
African Iridaceae 503
Antiaris toxicaria Lesch., 1810 593
Upas Tree 593
Antirrhinum linaria L., 1753 ..... (see *Linaria vulgaris*)
Apios americana Medik., 1787 746
Groundnut 746
Aplectrum hyemale (Muhl. ex Willd.) Torr., 1826 ..... 424, *525*
Adam-and-Eve Orchid 424, *525*
Ophrys hyemalis 424
Apocynum L., 1753 909
Dog Bane 909
Appalachian Barren Strawberry ..... (see *Waldsteinia fragarioides*)
Appalachian Mountain Mint ..... (see *Pycnanthemum flexuosum*)
Apple, Malaysian ..... (see *Syzygium malaccense*)
Apple, Thorn ..... (see *Datura stramonium*)
Aquilegia canadensis L., 1753 ..... 429, 604, *1055*
Columbine 429, *1055*
Arabis lyrata L., 1753 569
Lyrate Rockcress 569
Aralia L., 1753 ..... 196, *355*, 412, *502*, 608, 612, 930, 1022
Aralia hispida Vent. in Michx., 1803 ..... 412-13, *502*, 612, 1022
Bristly Sarsaparilla 412, 1022
Hispid Aralia 1022
Sarsaparilla 412, *502*, 1022
Wild Elder 1022
Aralia montana Blume *355*
Aralia spinosa L., 1753 ..... 608, 930
Arborvitae ..... (see *Thuja occidentalis*)
Arbutus uva-ursi L., 1753 ..... (see *Arctostaphylos uva-ursi*)
Arctium L., 1753 490
Burdock 490
Arctostaphylos uva-ursi (L.) Spreng., 1825 ..... 828, 929, 996
Arbutus uva-ursi L., 1753 ..... 87, 175-76, *581*, 828, 913, 929, 996
Bearberry 196, 828, 996
Areca catechu L., 1753 ..... *505*
Betel Palm *505*
Arethusa L., 1753 ..... 371, 377, 385, *517*, *525-27*
Arethusa bulbosa L., 1753 ..... *525*
Arethusa medeoloides Pursh, 1814 ..... (see *Pogonia verticillata*)
Arethusa ophioglossoides L., 1753 ..... (see *Pogonia ophioglossoides*)
Arethusa verticillata Muehl. ex Willd., 1805 ..... (see *Pogonia verticillata*)
Arisaema triphyllum (L.) Schott, 1832 154
Arum triphyllum L., 1753 ..... 154, 174
Indian Jack-in-the-Pulpit 154
Indian Turnip 154
Aristolochia serpentaria L., 1753 ..... 149, 268, *592*, 698
Serpentaria virginiana 175
Virginia Snakeroot 268
Arnica acaulis (Walter) Britton, Stern & Poggenb., 1888 176
Arrowgrass ..... (see *Triglochin*)
Arrowhead, Common ..... (see *Sagittaria sagittifolia*)
Arrowhead, Grassleaf ..... (see *Sagittaria graminea*)
Arrowleaf Falsepickerelweed ..... (see *Monochoria hastata*)
Artemisia pontica L., 1753 527
Wormwood 527
Artocarpus J. R. Forst. & G. Forst., 1775 93
Breadfruit 93
Artocarpus altilis (Parkinson) Fosberg, 1941 93
Arum triphyllum L., 1753 ..... (see *Arisaema triphyllum*)
Arum, Water ..... (see *Calla palustris*)
Arundinaria Michx., 1803 ..... 43, 611
Bamboo 43, *503*, 719
Cane 43, *503*, 611, *775*
Arundinaria gigantea 611
Arundo gigantea 611
Arundo Tourn. ex L., 1737 ..... *503*
Arundo donax L., 1753 ..... *503*
Arundo gigantea ..... (see *Arundinaria gigantea*)
Asarum canadense L., 1753 ..... 428, 611
Canadian Wild Ginger 428, 611
Asclepias L., 1753 ..... 269, 374, *599*, 614, 681-82, 909
Asclepias amplexicaulis Michx., 1803 681-82
Clasping Milkweed 681-82
Asclepias asperula var. *capricornu* (Woods) Woods, 1954 347
Antelope Horns 347
Asclepias decumbens L., 1753 ..... 374, *599*
Asclepias hybrida Michx., 1803 ..... 614, 681
Asclepias obtusifolia Michx., 1803 681
Asclepias tuberosa L., 1753 ..... 269, *599*
Butterfly Weed 269
Pleurisy Root *599*
Ash, Common Prickly ..... (see *Zanthoxylum americanum*)
Ash, Prickly ..... (see *Zanthoxylum clava-herculis*)
Ash-leaved Toothache Tree ..... (see *Zanthoxylum clava-herculis*)
Asimina triloba (L.) Dunal, 1817 1056
Annona triloba L., 1753 1056
Pawpaw 437, 440, 1056
Aspen, European ..... (see *Populus tremula*)
Asphodel ..... (see *Tofieldia pubens*)
Asplenium L., 1753 ... xxiv, 429, *513*, *528*, 868, 1063
Asplenium platyneuron (L.) Britton, Stern & Poggenb., 1888 ..... xxiv, 1063
Ebony Spleenwort ..... xxiv, 1063
Asplenium rhizophyllum L., 1753 ..... (see *Camptosorus rhizophyllus*)
Asplenium scolopendrium L., 1753 ..... 513, *528*
Phyllitis scolopendrium (L.) Newm., 1844 ..... 513, *528*
Phyllitis scolopendrium var. *americanum* Fernald, 1935 513
Hart's Tongue Fern 513, *528*
Asplenium trichomanes L., 1753 868
Maidenhair Spleenwort [Fern] 868
Aster L., 1753 609
Astragalus L., 1753 189
Atamasco Lily ..... (see *Zephyranthes atamasca*)
Atlantic Pigeon Wings ..... (see *Clitoria mariana*)
Aureolaria Raf., 1836 [1837] 286, 427, *528*, *582*
False Foxglove 286, 427, *528*
Aureolaria flava (L.) Farw., 1918 427
Gerardia flava L., 1753 427
Smooth Yellow False Foxglove 427

Aureolaria pedicularia (L.) Raf. 286
Gerardia pedicularia L., 1753 286
Fernleaf Yellow False Foxglove 286
Aureolaria virginica (L.) Pennell, 1913 582
Rhinanthus virginianus L., 1753 582
Downy Yellow False Foxglove 582
Australian Pine ..... (see *Casuarina equisetifolia*)
Avena mollis 521, 576
Oats 521, 576, 673
Azalea L., 1753 ..... 70, 502, 507
Azalea calendulacea Michx., 1803 ..... (see *Rhododendron calendulaceum*)
Azalea coccinea 502
Azalea nudiflora L., 1753 582
Azalea viscosa L., 1753 70
Azalea, Flame ..(see *Rhododendron calendulaceum*)

B

Bachelor's Button ..... (see *Centaurea cyanus*)
Bacopa caroliniana (Walter) B. L. Rob., 1908 ... 488
Blue Water Hyssop 488
Bald Cypress ..... (see *Taxodium distichum*)
Balduina Nutt., 1818 540
Balm, Mountain ..... (see *Cunila origanoides*)
Balsam Fir ..... (see *Abies balsamea*)
Balsam Poplar ..... (see *Populus balsamifera*)
Bamboo ..... (see *Arundinaria*)
Bambusa arundinacea 503
Arundo bambos L., 1753 503
Bane, Dog ..... (see *Apocynum*)
Baptisa tinctoria (L.) R. Brown, 1811 461
Yellow Wild Indigo 461
Barnyard Grass ..... (see *Echinochloa crus-galli*)
Bartonia Muhl. ex Willd., 1801 [Gentianaceae] 291, 292, 417, 496, 505, 506, 524, 572, 578, 838, 901
Bartonia Pursh ex Sims, 1812 [Loasaceae] 519, 539-40, 572, 792, 827, 836-38
Bartonia bracteata Curtis, 1807 [Loasaceae] ..... (see *Mentzelia decapetala*)
Bartonia decapetala Pursh, 1812 792
Bartonia ornata Pursh, 1814 ..... (see *Mentzelia decapetala*)
Bartonia polypetala Nutt., 1812 ..... (see *Mentzelia decapetala*)
Bartonia superba Nutt., 1812 ..... (see *Mentzelia decapetala*)
Bartonia tenella Muhl. ex Willd., 1801 [Gentianaceae] 291, 496, 505-06, 519, 524, 572, 838
Centaurella paniculata Michx., 1803 496
Screwstem 496
Bartramia ..... (see *Chelone*)
Bartramia Salisb., 1793 277
Bartramia pomiformis Hedwig, 1801 [moss] 429
Bartramia vulgaris Michx., 1803 [moss] 429
Bartsia coccinea L. ..... (see *Castilleja coccinea*)
Basswood, American ..... (see *Tilia americana*)
Batata hispanorum ..... (see *Ipomoea batatas*)
Batata virginiana ..... (see *Solanum tuberosum*)
Bay Starvine ..... (see *Schisandra glabra*)
Bay, Loblolly ..... (see *Gordonia lasianthus*)
Bayberry ..... (see *Morella cerifera*)
Beach Plum ..... (see *Prunus maritima*)
Bean 172, 425, 461, 546, 564
Bean, Castor ..... (see *Ricinus communis*)
Bean, Eastern Coral ..... (see *Erythrina herbacea*)
Bean, Ignatius ..... (see *Ignatia amara*)
Bean, Java ..... (see *Senna obtusifolia*)
Bearberry ..... (see *Arctostaphylos uva-ursi*)
Beauty, Spring ..... (see *Claytonia*)
Beautybush, American ..... (see *Callicarpa americana*)
Beebalm, Scarlet ..... (see *Monarda didyma*)
Beeblossom, Biennial ..... (see *Gaura biennis*)
Beech, American ..... (see *Fagus grandifolia*)
Beechdrops ..... (see *Epifagus virginiana*)
Befaria Mutis ex L. f., 1771 ..... 412, 909
Befaria racemosa Vent. 412
Tar Flower 412
Bellwort ..... (see *Uvularia*)
Berry, Service ..... (see *Amelanchier canadensis*)
Betel Palm ..... (see *Areca catechu*)
Betula L., 1753 ..... 414, 428-29, 731, 751
Birch 41, 428, 751
Betula alnus L., 1753 731
Alder 731
Betula populifolia Marshall, 1785 ..... 414, 428
Gray Birch 428
Biennial Beeblossom ..... (see *Gaura biennis*)
Bigleaf Magnolia ..... (see *Magnolia macrophylla*)
Bigleaf Snowbell ..... (see *Styrax grandifolia*)
Bignonia capreolata L., 1753 592
Bignonia catalpa L., 1753 ..... 295, 434, 926
Bignonia radicans L., 1753 ..... (see *Campsis radicans*)
Bignonia sempervirens L., 1753 ..... (see *Gelsemium sempervirens*)
Bindweed, Field ..... (see *Convolvulus*)
Birch ..... (see *Betula*)
Birch, Gray ..... (see *Betula populifolia*)
Bitterbrush, Antelope ..... (see *Purshia tridentata*)
Bittercress, Bulbous ..... (see *Dentaria bulbifera*)
Bitterroot ..... (see *Lewisia rediviva*)
Bittersweet, American ..... (see *Celastrus scandens*)
Bitterweed ..... (see *Helenium autumnale*)
Bixa orellana L., 1753 581
Achiote 581
Black Cherry ..... (see *Prunus serotina*)
Black Cohosh ..... (see *Thalictrodes racemosa*)
Black Henbane ..... (see *Hyoscyamus niger*)
Black Locust ..... (see *Robinia pseudoacacia*)
Black Saltwort ..... (see *Glaux maritima*)
Black Snakeroot ..... (see *Thalictrodes racemosa*)
Black Walnut ..... (see *Juglans nigra*)
Bladdernut ..... (see *Staphylea*)
Bladderwort ..... (see *Utricularia*)
Bladderwort, Eastern Purple ..... (see *Utricularia purpurea*)
Bladderwort, Horned ..... (see *Utricularia cornuta*)
Bladderwort, Swollen ..... (see *Utricularia inflata*)
Bladderwort, Violet ..... (see *Utricularia violacea*)
Bladderwort, Zigzag ..... (see *Utricularia subulata*)
Blazingstar, Dense ..... (see *Liatris spicata*)
Blazingstar, Scaly ..... (see *Liatris squarrosa*)
Blighia sapida K. D. Koenig, 1806 505
Akee Tree 505
Blood Sage ..... (see *Salvia coccinea*)
Bloodroot ..... (see *Sanguinaria canadensis*)
Blue Water Hyssop ..... (see *Bacopa caroliniana*)
Blue Waxweed ..... (see *Cuphea viscosissima*)
Bluet ..... (see *Houstonia*)
Bluntleaf Waterleaf ..(see *Hydrophyllum canadense*)
Bogbean ..... (see *Menyanthes*)
Bogmoss ..... (see *Mayaca*)

Bogrush ..... (see *Schoenus*)
Boneset ..... (see *Eupatorium perfoliatum*)
Bottle Gentian ..... (see *Gentiana*)
Boykinia Nutt., 1834 921
Brasenia Schreb., 1789 ..... 486, 496
Brasenia schreberi J. F. Gmelin, 1791 496
Hydropeltis purpurea Michx., 1803 496
Schreber Watershield 496
Brazilwood ..... (see *Caesalpinia echinata*)
Breadfruit ..... (see *Artocarpus*)
Brickellia Ell., [1823] 1824 486
Bristly Sarsaparilla ..... (see *Aralia hispida*)
Briza L., 1753 575
Quaking Grass 575
Briza canadensis Michx., 1803 575
Broadleaf Plantain ..... (see *Plantago major*)
Broadleaf Rosette Grass ..... (see *Dichanthelium latifolium*)
Brook Pimpernel ... (see *Veronica anagallis-aquatica*)
Brookweed, Seaside ..... (see *Samolus valerandi*)
Broom, Scotch ..... (see *Cytisus scoparius*)
Broomcorn ..... (see *Sorghum bicolor*)
Bryum murale (Hedw.) With., 1801 [moss] 428
Buckeye ..... (see *Aesculus*)
Buckeye, Red ..... (see *Aesculus pavia*)
Buckeye, White ..... (see *Aesculus parviflora*)
Buckeye, Yellow ..... (see *Aesculus flava*)
Buckthorn, Carolina ..... (see *Frangula caroliniana*)
Buffalobean ..... (see *Solanum rostratum*)
Buffaloberry, Russet ..... (see *Shepherdia canadensis*)
Buffalonut ..... (see *Pyrularia pubera*)
Buffonia Adans., 1763 292
Bufonia Sauv. ex L., 1753 292
Bufonia tenuifolia L., 1753 292
Bugloss ..... (see *Anchusa villosa*)
Bulbous Bittercress ..... (see *Dentaria bulbifera*)
Bunchflower ..... (see *Melanthium*)
Bunchflower, Virginia ..... (see *Melanthium virginicum*)
Bunium L., 1753 535
Bunium bulbocastanum L., 1753 535
Great Pignut 535
Burdock ..... (see *Arctium*)
Burshia humilis Raf. ..... (see *Myriophyllum humile*)
Bush, Allspice ..... (see *Lindera benzoin*)
Bushy Seedbox ..... (see *Ludwigia alternifolia*)
Butomus umbellatus L., 1753 426
Flowering Rush 426
Butter and Eggs ..... (see *Linaria vulgaris*)
Buttercup, Creeping ..... (see *Ranunculus repens*)
Buttercup, Fig ..... (see *Ranunculus ficaria*)
Butterfly Pea ..... (see *Clitoria mariana*)
Butterfly Weed ..... (see *Asclepias tuberosa*)

C

Cabbage, Skunk ..... (see *Symplocarpus foetidus*)
Cabomba Aublet, 1775 487
Fanwort 487
Cactus, Opuntia ..... (see *Opuntia*)
Caesalpinia echinata Lam., 1785 290
Brazilwood 290
Caffea arabica L., 1753 186
Coffee 186, 208, 222, 281, 294, 365-66, 621, 829
Calla palustris L., 1753 377
Water Arum 377
Callicarpa L., 1753 ..... 425, 605, 612, 626
Callicarpa americana L., 1753 425
American Beautybush 425
Bermuda Mulberry 425
Callisia rosea (Vent.) D. R. Hunt, 1986 487
Tradescantia rosea Vent., 1800 ..... 487, 489
Calochortus elegans Pursh, 1814 517
Elegant Mariposa Lily 517
Calopogon R. Br., 1813 424
Limodorum L., 1753 ..... 424, 444, 503
Calopogon tuberosus (L.) Britton, Stern & Poggenb., 1888 424
Limodorum tuberosum L., 1753 ..... 424, 503
Tuberous Grasspink 424
Caltha palustris L., 1753 536
Marsh Marigold 536
Calycanthus L., 1759 ..... 293, 434, 503
Sweetshrub 293
Calydorea coelestina (Bartram) Goldblatt & Henrich, 1991 450
Ixia coelestina W. Bartram, 1791 450
Bartram's Ixia 450
Calypso borealis Salisb., 1807 ..... 444, 818
Fairyslipper 444
Calystegia sepium (L.) R. Br., 1810 450
Wild Morning Glory 450
Camellia L., 1753 434
Camellia sinensis L., 1753 ..... 186, 434
Tea 20, 46, 49, 89, 101, 222, 360, 365-66, 434, 505, 932
Camellia, Mountain ..... (see *Stewartia ovata*)
Campion, European ..... (see *Lychnis viscosa*)
Campsis grandiflora (Thunb.) K. Schum., 1894 ..... 556, 1062
Bignonia grandiflora Thunb., 1784 .. 556, 1062
Chinese Trumpet Creeper 556, 1062
Campsis radicans (L.) Seem., 1867 ..... 295, 634
Bignonia radicans L., 1753 ..... 295, 634
Trumpet Creeper 295
Camptosorus rhizophyllus (L.) Link, 1833 . 429, 535
Asplenium rhizophyllum L., 1753 ..... 429, 535
Walking Fern 429, 535
Canada Lily ..... (see *Lilium canadense*)
Canadian Wild Ginger ..... (see *Asarum canadense*)
Cane ..... (see *Arundinaria*)
Cane, Giant ..... (see *Arundinaria gigantea*)
Cane, Sugar ..... (see *Saccharum*)
Canna L., 1753 ..... 297, 425, 467
Canna glauca L., 1753 425
Canna indica L., 1753 425
Indian Shot 425
Caper Spurge ..... (see *Euphorbia lathyris*)
Cardamine pratensis L., 1753 424
Cuckoo Flower 424
Cardamom ..... (see *Amomum*)
Cardinal Flower ..... (see *Lobelia cardinalis*)
Carolina Buckthorn ..... (see *Frangula caroliniana*)
Carolina Dayflower ..... (see *Commelina caroliniana*)
Carolina Jessamine ... (see *Gelsemium sempervirens*)
Carolina Lily ..... (see *Lilium carolinianum*)
Carpetweed ..... (see *Mollugo verticillata*)
Carpinus caroliniana Walter, 1788 438
American Hornbean 438
Carya Nutt., 1818 ..... 581, 693, 900
Hickory 437
Cashew ..... (see *Anacardium occidentale*)
Cassia L., 1753 ..... 290, 426, 593, 604-05

Cassia chamaecrista Michx., 1803 ..... (see *Chamaecrista fasciculata*)
Cassia marilandica L., 1753 (see *Senna marilandica*)
Cassia obtusifolia L., 1753 .....(see *Senna obtusifolia*)
Castanea dentata (Marshall) Borkh., 1800 620
American Chestnut 620
Chestnut 49, 69, 435-37, 620, 719, 754
Castanea nana Muhl., 1813 489
Castanea pumila (L.) Mill., 1768 489
Chinkapin 436-38, 489
Castilleja coccinea (L.) Spreng, 1825 425
Bartsia coccinea L., 1753 425
American Painted Cup 425
Indian Paintbrush 425
Castor Bean ..... (see *Ricinus communis*)
Casuarina equisetifolia L., 1759 407
Australian Pine 407
Catalpa Scop., 1777 ..... 196, 295, 434
Catawba Rosebay..(see *Rhododendron catawbiense*)
Catbrier ..... (see *Smilax rotundifolia*)
Catchfly ..... (see *Silene*)
Catchfly ..... (see *Silene virginica*)
Catchfly Grass ..... (see *Leersia lenticularis*)
Catchfly, Whorled ..... (see *Silene stellata*)
Catgut ..... (see *Galega virginica*)
Ceanothus L., 1753 293
Cedar 438
Cedar, Eastern White ..... (see *Thuja occidentalis*)
Celastrus scandens L., 1753 266
American Bittersweet 266
Celosia paniculata L., 1753 503
Iresine celosia L., 1759 503
False Chaff Flower 503
Celtis laevigata Willd., 1814 ..... 437, 439
Hackberry 437, 439, 717
Sugar Berry 439
Centaurea cyanus L., 1753 ..... 452, 454, 634, 726
Bachelor's Button 452
Cornflower 452, 726
Centaurella Michx., 1803 ..... (see *Bartonia*)
Centaurella paniculata Michx., 1803 ..... (see *Bartonia tenella*)
Cephalotus Labill., 1806 613
Cercis L., 1753 536
Redbud 536
Chamaecrista fasciculata (Michx.) Rydb., 1906... 593
Cassia chamaecrista Michx., 1803 593
Showy Partridge Pea 593
Chamaelirium carolinianum Willd., 1808 .. 424, 507
Melanthium dioicum Walter, 1788.... 424, 507
Veratrum luteum L., 1753 424
Chamaerops L., 1753 ..... 486-89, 562
Chamaerops acaulis Michx., 1803 ..... (see *Corypha pumila*)
Chamaerops humilis L., 1753 562
Chamaerops hystrix Fraser ex Pursh, 1814 ..... (see *Rhapidophyllum hystrix*)
Chamaerops serrata [*sic, serrulata*] Michx., 1803 487-89
Chara L., 1753 [Green Algae] 492
Chasea 270
Cheiranthus incanus L., 1753 ...(see *Mattiola incana*)
Chelidonium majus L., 1753 868
Chelone L., 1753 ..... 277, 286, 867
Bartramia 277
Turtlehead 867
Chelone glabra L., 1753 286
White Turtlehead 286
Chelone hirsuta L., 1753 ..... (see *Peristemon pubescens*)
Cherry, Black ..... (see *Prunus serotina*)
Cherry, Fire ..... (see *Prunus pensylvanica*)
Cherry, Ground ..... (see *Physalis pensylvanica*)
Cherry, Wild ..... (see *Prunus virginiana*)
Chestnut, American ..... (see *Castanea dentata*)
Chestnut, Horse ..... (see *Aesculus hippocastaneum*)
Chimaphila maculata (L.) Pursh, 1814 ..... 607, 929
Pyrola maculata L., 1753 ..... 607, 929
Chimaphila umbellata (L.) W. P. C. Barton, 1817 ..... 419, 430, 607, 637, 913, 929, 996
Pyrola umbellata L., 1753 ..... 419, 430, 607, 637, 828, 913, 929
Pipsissewa 419, 430, 637, 828, 996
Chimonanthus Lindl., 1819 434
China Root ..... (see *Smilax china*)
Chinaberry ..... (see *Melia azedarach*)
Chinese Peony ..... (see *Paeonia moutan*)
Chinese Trumpet Creeper ..... (see *Campsis grandiflora*)
Chinkapin ..... (see *Castanea pumila*)
Chiococca P. Br., 1756 488
Milkberry 488
Chionanthus virginicus L., 1753 608
Fringetree 608
Chrysanthemum L., 1753 ..... 276, 336, 503
Chrysanthemum ..... (see *Leucanthemum vulgare*)
Chrysanthemum indica L., 1753 503
Chrysanthemum leucanthemum L., 1753 ..... (see *Leucanthemum vulgare*)
Chrysobalanus icaco L., 1753 505
Icaco Coco Plum 505
Church Steeples ..... (see *Agrimonia eupatoria*)
Cicuta maculata L., 1753 ..... 268, 593
Beaver Poison 268
Common Water Hemlock 268, 593
Musquash Root 268
Snakeweed 268
Wild Parsnip 268
Cicuta venenosa Greenway, 1793 ..... (see *Angelica venenosa*)
Cinchona L., 1753 ..... 63, 85, 172, 175-76, 384, 442, 445, 488, 902, 933
Cinchona bracteata 488
Cinchona officinalis L., 1753 ..... 85, 172, 175-76, 933
Cinchona peruviana Mutis 175
Quinine 172, 175, 201, 232, 442, 445, 488, 732, 797
Cinchona peruviana Mutis... (see *Cinchona officinalis*)
Cineraria L., 1763 407
Cinquefoil, Norwegian ..... (see *Potentilla norvegica*)
Cistus L., 1753 503
Clammy Locust ..... (see *Robinia viscosa*)
Clasping Milkweed ..... (see *Asclepias amplexicaulis*)
Clavaria acrospermum [Fungi] 428
Claytonia L., 1753 535
Spring Beauty 535
Clematis L., 1753 ..... 581, 608, 867
Clematis sericea 608
Clematis viorna L., 1753 608
Vasevine 608
Clematis virginiana L., 1755 582
Clematis vitalba L., 1753 687

Cleome gynandra L., 1753 427
Cleome pentaphylla L., 1762 427
Spider Flower 427
Spiderwisp 427
Cleome pentaphylla L., 1762 ..... (see *Cleome gynandra*)
Clethra acuminata Michx., 1803 ..... 610, 1026
Pepperbush 610, 1026
Cliffortia trifoliata L., 1753 581
African Rosaceae 581
Cliftonia monophylla (Lam.) Britton & Sarg., 1892 576
Clinopodium rugosum L., 1753 592
Clintonia Raf., 1818 ..... 444, 504, 589
Clintonia borealis (Aiton) Raf., 1832 589
Dracaena borealis Sol. in Aiton, 1789 504
Clintonia umbellulata (Michx.) Morong, 1894 504
White Clintonia 504
Clintonia, White ..... (see *Clintonia umbellata*)
Clitoria mariana L., 1753 ..... 507, 1027
Atlantic Pigeon Wings 507
Butterfly Pea 1027
Coccoloba uvifera L., 1759 505
Seagrape 505
Coffee ..... (see *Calfea arabica*)
Cohosh, Black ..... (see *Thalictrodes racemosa*)
Coldenia L., 1753 630
Eddya Torr. & A. Gray, 1855 630
Colicroot, Golden ..... (see *Aletris aurea*)
Colicroot, White ..... (see *Aletris farinosa*)
Collinsia L., 1753 ..... 283, 540
Collinsia canadensis L., 1753 283
Horseweed 283
Richweed 425
Collinsia praecox Walter, 1788 283
Collinsonia L., 1753 ..... 409, 425, 461, 481
Horsebalm 409, 425, 461, 481
Collinsonia anisata Sims, 1809 481
Collinsonia canadensis L., 1753 ..... 425, 461
Knotweed 425
Richweed 425
Coltsfoot ..... (see *Tussilago*)
Columbine ..... (see *Aquilegia canadensis*)
Columbo, American ..... (see *Frasera caroliniensis*)
Commelina L., 1753 ..... 409, 425, 575, 624
Dayflower 409, 425
Commelina caroliniana Walter, 1788 575
Carolina Dayflower 575
Commelina communis L., 1753 575
Commelina virginica L., 1762 ..... 409, 425
Virginia Dayflower 409, 425
Common Arrowhead ..... (see *Sagittaria sagittifolia*)
Common Meadow Beauty ..... (see *Rhexia virginica*)
Common Prickly Ash ..... (see *Zanthoxylum*)
Common Tansey ..... (see *Tanacetum vulgare*)
Common Water Hemlock ..... (see *Cicuta maculata*)
Comptonia asplenifolia L. ..... (see *Comptonia peregrina*)
Comptonia peregrina (L.) J. M. Coult., 1894 429
Comptonia asplenifolia Banks, 1791 429
Sweet Fern 429
Conium maculatum L., 1753 593
Hemlock 134, 391, 593
Conopholis americana (L.) Wallr. f., 1825 528
Epifagus americanus Nutt., 1818 528
Orobanche virginiana L., 1753 528
American Squawroot 528
Orobanche virginica 528
Conostylis R. Br., 1810 630
Conostylis americana Pursh, 1813 [1814] ..... (see *Lophiola aurea*)
Convallaria L., 1753 ..... 503, 589
Lily of the Valley 503, 589
Convolvulus L., 1753 ..... 410-11, 426
Field Bindweed 411, 426
Convolvulus batatas L., 1753 ..... (see *Ipomoea batatas*)
Copper-colored Iris ..... (see *Iris fulva*)
Coptis trifolia (L.) Salisb., 1807 ..... 176, 525
Helleborus trifolius L., 1753 ..... 176, 525
Threeleaf Goldthread 176
Coral Bean ..... (see *Erythrina*)
Coral Greenbrier ..... (see *Smilax walteri*)
Cordyceps [Fungi] 565
Coreopsis L., 1753 ..... 429, 525
Tickseed 429
Corn ..... (see *Zea mays*)
Cornflower ..... (see *Centaurea cyanus*)
Cornus L., 1753 ... 264, 268, 503, 588, 605, 610, 933
Dogwood 66, 175-76, 196, 264, 437, 587-88, 897
Cornus florida L., 1753 ..... 264, 588, 933
Eastern Dogwood 264
Cornus maculata 503
Cornus rugosa Lam., 1786 610
Cornus circinata L'Hér., 1788 610
Cornus sericea L., 1767 ..... 588, 933
Corydalis Vent., 1803 569
Corylus L., 1753 526
Hazelnut 526
Corypha palmetto Walter, 1788 ..... (see *Sabal palmetto*)
Corypha pumila Walter 1788 489
Chamaerops acaulis Michx., 1803 489
Cotton ..... (see *Gossypium*)
Cottongrass, Tawny ..... (see *Eriophorum virginicum*)
Cotton Tree ..... (see *Populus deltoides*)
Cottonwood ..... (see *Populus deltoides*)
Crabapple ..... (see *Malus coronaria*)
Cranberry ..... (see *Vaccinium macrocarpon*)
Cranberry, Small ..... (see *Vaccinium oxycoccos*)
Crantzia Nutt., 1818 [Apiaceae] 540
Crape Myrtle ..... (see *Lagerstroemia indica*)
Creeper, Chinese Trumpet ..... (see *Campsis grandiflora*)
Creeper, Trumpet ..... (see *Campsis radicans*)
Creeping Buttercup ..... (see *Ranunculus repens*)
Crop, Stone ..... (see *Hylotelephium telephioides*)
Croton sebiferum L., 1753 505
Crotonopsis Michx., 1803 576
Cuckoo Flower ..... (see *Cardamine pratensis*)
Cucubalus stellatus L., 1753 ..... (see *Silene stellata*)
Cucumber Tree ..... (see *Magnolia acuminata*)
Cucumber, Indian ..... (see *Medeola virginiana*)
Cultivated Rice ..... (see *Oryza sativa*)
Culver's Root ..... (see *Veronicastrum virginicum*)
Cunila L., 1759 ..... 425, 527
Cunila origanoides (L.) Britton, 1894 425
Satureja origanoides L., 1753 425
Dittany 425
Mountain Balm 425
Cuphea viscosissima Jacq., 1772 623
Blue Waxweed 623

Cupressus distichus L., 1753 ..... (see *Taxodium distichum*)
Cupressus macnabiana A. Murray, 1855 85
Currant ..... (see *Ribes*)
Currant, European Black ..... (see *Ribes nigrum*)
Currant, Golden ..... (see *Ribes aureum*)
Cuscuta americana L., 1753 ..... 6, 613
American Dodder 613
Cuscuta europaea L., 1753 ..... 6, 613
Greater Dodder 613
Cutgrass ..... (see *Leersia*)
Cutgrass, Giant ..... (see *Zizaniopsis miliacea*)
Cutleaf Teasel ..... (see *Dipsacus laciniatus*)
Cutleaf Vipergrass ..... (see *Scorzonera laciniata*)
Cymbidium Sw., 1799 ..... 377, 444
Cymbidium pulchellum Sw., 1799 ..... 377, 424
Cynanchum vincetoxicum (L.) Pers., 1805 184
Cynoglossum L., 1753 613
Cyperella campestris (L.) MacMill., 1892 573
Juncus campestris L., 1753 573
Woodrush 573
Cyperus L., 1753 ..... 374, 574
Sedge 436
Cypress, Bald ..... (see *Taxodium distichum*)
Cypripedium L., 1753 ..... 444, 621
Lady Slipper 444, 621
Cypripedium acaule (L.) Aiton, 1789 621
Yellow Lady Slipper 621
Cypripedium bulbosum L., 1753 444
Cytisus Desf., 1798 ..... 184, 503, 867
Cytisus laburnum L., 1753 867
Cytisus scoparius (L.) Link, 1822 184
Spartium scoparium L., 1753 184
Indigo Weed 184
Scotch Broom 184

D

Dahoon ..... (see *Ilex cassine*)
Daisy, Pine Barren ..... (see *Sclerolepis uniflora*)
Dalbergia L. f., 1782 558
Indian Rosewood 558
Dalibarda fragarioides Michx., 1803 ..... (see *Waldsteinia fragarioides*)
Dandelion ..... (see *Taraxacum officinale*)
Dandelion, Virginia Dwarf ..... (see *Krigia virginica*)
Date Palm ..... (see *Phoenix dactylifera*)
Datura L., 1753 ..... 185, 893, 923
Datura stramonium L., 1753 ..... 185, 923
Jimsonweed 185, 196
Thorn Apple 185
Daucus carota L., 1753 424
Queen Anne's Lace 424
Wild-carrot 424
Dawn Redwood ..... (see *Metasequoia*)
Dayflower ..... (see *Commelina*)
Dayflower, Carolina ..... (see *Commelina caroliniana*)
Dayflower, Virginia ..... (see *Commelina virginica*)
Delphinium L., 1753 604
Delphinium exaltatum Aiton, 1789 604
Delphinium tridactylum Michx., 1803 604
Delphinium tridactylum Michx., 1803 ..... (see *Delphinium exaltatum*)
Dense Blazingstar ..... (see *Liatris spicata*)
Dentaria bulbifera L., 1753 ..... 535, 536
Bulbous Bittercress 535-36
Dentella repens (L.) J. R. Forst., 1776 556
Deschampsia flexuosa (L.) Trin., 1836 574
Aira flexuosa L., 1753 574
Wavy Hairgrass 574
Desmanthus brachylobus (Willd.) Benth., 1841 577
Acacia brachyloba Willd., 1806 577
Desmodium gyrans (L. f.) DC., 1825 634
Hedysarum gyrans L. f. 1781 [1782] 634
Dianthus L., 1753 625
Pink 625
Dicentra cucullaria (L.) Bernh., 1833 424
Fumaria cucullaria L., 1753 424
Dutchmen's Breeches 424
Dichanthelium latifolium (L.) Gould & C. A. Clark, 1978 [1979] 574
Panicum latifolium L., 1753 574
Broadleaf Rosette Grass 574
Digitalis L., 1753 ..... 154, 172, 455, 491, 892, 922, 929
Digitalis purpurea L., 1753 ..... 892, 922, 929
Purple Foxglove 196, 892, 922, 929
Dilepyrum Raf., 1808 ..... (see *Oryzopsis*)
Dillenia L., 1753 556
Dioda L., 1753 575
Dioda teres Walter, 1788 575
Spermacoce diodina Michx., 1803 575
Rough Buttonweed 575
Diodia tetragona Walter, 1788 ..... (see *Diodia virginiana*)
Diodia virginiana L., 1753 575
Diodia tetragona Walter, 1788 575
Virginia Buttonweed 575
Dionaea J. Ellis, 1770 ..... 414, 425, 433, 600, 634, 909, 932
Dionaea muscipula J. Ellis 425, 599, 600
Venus Flytrap 414, 425, 599, 600
Dioscorea villosa L., 1753 608
Diospyros L., 1753 ..... 294, 641, 716
Persimmon 197, 294, 320, 391, 434, 641, 934
Dipsacus L., 1753 507
Teasel 507
Dipsacus laciniatus L., 1753 507
Cutleaf Teasel 507
Dirca palustris L., 1753 269
Leatherwood 269
Moosewood 269
Dittany ..... (see *Cunila origanoides*)
Dodder, American ..... (see *Cuscuta americana*)
Dodder, Greater ..... (see *Cuscuta europaea*)
Dodecatheon L., 1753 ..... 527, 604
Shooting Star 641
Dodecatheon integrifolium Michx., 1803 604
Dodecatheon meadia L., 1753 527
Star of Ohio 527
Dog Bane ..... (see *Apocynum*)
Dogwood ..... (see *Cornus*)
Dogwood, Eastern ..... (see *Cornus florida*)
Dorstenia L., 1753 184
Dorstenia contrajerva L., 1753 184
Downy Rattlesnake Plantain ..... (see *Goodyera pubescens*)
Downy Yellow False Foxglove ..... (see *Aureolaria virginica*)
Draba verna L., 1753 731
Spring Draba 731
Draba, Spring ..... (see *Draba verna*)
Dracaena borealis Sol. in Aiton, 1789 ..... (see *Clintonia borealis*)

Dracaena draco L., 1767 560
Dragon's Blood 560
Dracontium L., 1753 ..... 264, 626
Dracontium pertusum L., 1753 264
Dragon's Blood ..... (see *Dracaena draco*)
Drosera L., 1753 ..... 496, 505
Drosera filiformis Raf., 1808 496
Threadleaf Sundew 496
Dwarf Ginseng ..... (see *Panax trifolium*)
Dwarf Witchalder ..... (see *Fothergilla gardeni*)

E

Early Meadowrue ..... (see *Thalictrum dioicum*)
Eastern Coral Bean ..... (see *Erythrina herbacea*)
Eastern Dogwood ..... (see *Cornus florida*)
Eastern Featherbells .. (see *Stenanthium gramineum*)
Eastern Purple Bladderwort ..... (see *Utricularia purpurea*)
Eastern White Cedar ..... (see *Thuja occidentalis*)
Ebony Spleenwort ..... (see *Asplenium platyneuron*)
Echinochloa crus-galli (L.) P. Beauv., 1812 574
Panicum crus-galli L., 1753 574
Barnyard Grass 574
Echinops L., 1753 ..... 378, 1051
Echinops sphaerocephalus L., 1753 1051
Globe Thistle 1051
Echites difformis Walter, 1788 503
Eddya Torr. & A. Gray, 1855 ..... (see *Coldenia*)
Eelgrass ..... (see *Vallisneria*)
Eel-grass, American ..... (see *Vallisneria americana*)
Elderberry ..... (see *Sambucus*)
Elegant Mariposa Lily ..... (see *Calochortus elegans*)
Elm, American ..... (see *Ulmus americana*)
Enslenia Nutt., 1818 540
Epifagus Nutt., 1818 ..... 175, 527-28
Epifagus americana Nutt., 1818 ..... (see *Conopholis americana*)
Epifagus virginiana (L.) W. P. C. Barton 528
Beechdrops 528
Equisetum L., 1753 ..... 450, 893
Equisetum hyemale L., 1753 ..... 171, 916
Rough Horsetail 450, 916
Scouring Rush 450, 893
Erigeron philadelphicus L., 1753 202
Philadelphia Fleabane 202
Eriophorum hudsonianum Michx., 1803 575
Eriophorum virginicum L., 1753 505
Eryngium yuccifolium Michx., 1803 ..... 616, 698
Rattlesnake Master 616, 698
Erythrina herbacea L., 1753 ..... 270, 564
Eastern Coral Bean 270, 564
Erythronium L., 1753 535
Fawnlily 535
Ethulia uniflora Walter, 1788 ..... (see *Sclerolepis uniflora*)
Eugenia L., 1753 505
Eugenia jambos L., 1753 ..... (see *Syzygium jambos*)
Eugenia malaccensis L., 1753 ..... (see *Syzygium malaccense*)
Euonymus obovatus Nutt., 1818 267
Strawberry Bush, Running 267
Eupatorium L., 1753 ... 268, 269, 505, 592, 616, 698
Eupatorium hyssopifolium L., 1753 616
Eupatorium leucolepis (DC.) Torr. & A. Gray, 1841 ..... 616, 698
Justiceweed 616, 698
Eupatorium perfoliatum L., 1753 268-69
Boneset 269
Thoroughwort 269
Eupatorium rotundifolium L., 1753 ..... 505, 592
Eupatorium verbenifolium Michx., 1803 505
Euphorbia L., 1753 ..... 189, 265, 268, 385, 428, 596, 797
Spurge 428
Euphorbia corollata L., 1753 797
Hippo 797
Ipecac 797
Euphorbia heterophylla L., 1753 385
Euphorbia ipecacuanhae L., 1753 ..... 265, 268, 797
Hippo 797
Ipecac 401, 797
Euphorbia lathyris L., 1753 428
Caper Spurge 428
Mole Plant 428
European Aspen ..... (see *Populus tremula*)
European Black Currant ..... (see *Ribes nigrum*)
European Campion ..... (see *Lychnis viscosa*)
European Larch ..... (see *Larix decidua*)
European White Waterlily ..... (see *Nymphaea alba*)
Eustoma Salisb. ex G. Don, 1805 [1806] 492, 792
Eustoma grandiflorum (Raf.) Shinners, 1957 792
Prairie Gentian 792
Euterpe Mart., 1823 [Arecaceae] 709
Evening Starlily ..... (see *Mentzelia decapetala*)
Exogonium purga (Wender.) Benth., 1840 209
Ipomoea purga (Wender.) Hayne, 1833 209
Jalap 183, 209-10, 213

F

Fagus castanea nana ..... (see *Castanea nana*)
Fagus castanea pumila ..... (see *Castanea pumila*)
Fagus grandifolia Ehrh., 1788 ..... 437, 641, 642
American Beech 437, 439, 527, 641, 642
Fairyslipper ..... (see *Calypso borealis*)
False Aloe ..... (see *Manfreda virginica*)
False Chaff Flower ..... (see *Celosia paniculata*)
False Foxglove ..... (see *Aureolaria*)
False Pennyroyal ..... (see *Isanthus brachiatus*)
False Poison Sumac ..... (see *Rhus michauxii*)
False Pickerelweed, Arrowleaf ..... (see *Monochoria hastata*)
Fanpetals, Virginia ..... (see *Sida hermaphrodita*)
Fanwort ..... (see *Cabomba*)
Fawnlily ..... (see *Erythronium*)
Featherbells, Eastern . (see *Stenanthium gramineum*)
Felwort ..... (see *Swertia*)
Fern, Resurrection ..... (see *Pleopeltis polypodioides*)
Fern, Sweet ..... (see *Comptonia peregrina*)
Fern, Virginia Polypody ..... (see *Polypodium virginianum*)
Fern, Walking ..... (see *Camptosorus rhizophyllus*)
Fernleaf Yellow False Foxglove ..... (see *Aureolaria pedicularia*)
Fescue Grass ..... (see *Festuca*)
Festuca L., 1753 ..... 425, 574, 576
Fescue Grass 425, 576
Festuca diandra Michx., 1803 576
Festuca elatior L., 1753 574
Festuca poaceoides Michx., 1803 576
Festuca polystachya Michx., 1803 576
Fevertree ..... (see *Pinckneya bracteata*)
Field Bindweed ..... (see *Convolvulus*)

Fig Buttercup ..... (see *Ranunculus ficaria*)
Figwort, Woodland ..... (see *Scrophularia nodosa* var. *marilandica*)
Filipendula ulmaria (L.) Maxim., 1879 503
Spiraea ulmaria L., 1753 503
Queen of the Meadow 503
Fire Cherry ..... (see *Prunus pensylvanica*)
Firepink ..... (see *Silene virginica*)
Flame Azalea ...(see *Rhododendron calendulaceum*)
Flax Weed ..... (see *Linaria vulgaris*)
Fleabane, Philadelphia ..... (see *Erigeron philadelphicus*)
Floating Heart ..... (see *Nymphoides aquatica*)
Florida Poisontree ..... (see *Metopium toxiferum*)
Floridian Anisetree ..... (see *Illicium floridanum*)
Flower, Cardinal ..... (see *Lobelia cardinalis*)
Flower, Cuckoo ..... (see *Cardamine pratensis*)
Flower, False Chaff ..... (see *Celosia paniculata*)
Flower, Saddle ..... (see *Sarracenia purpurea*)
Flower, Stock July ..... (see *Mattiola incana*)
Flower, Tar ..... (see *Befaria racemosa*)
Flower, Whip-poor-will ..... (see *Trillium cernuum*)
Flowering Rush ..... (see *Butomus umbellatus*)
Flypoison ..... (see *Zygadenus muscitoxicum*)
Flytrap, Venus ..... (see *Dionaea muscipula*)
Forget-me-not ..... (see *Myosotis*)
Fothergilla gardeni Murray, 1774 592
Dwarf Witchalder 592
Foxglove, Downy Yellow False ..... (see *Aureolaria virginica*)
Foxglove, False ..... (see *Aureolaria*)
Foxglove, Fernleaf Yellow False ..... (see *Aureolaria pedicularia*)
Foxglove, Purple ..... (see *Digitalis purpurea*)
Foxglove, Smooth Yellow False (see *Aureolaria flava*)
Fragrant Sumac ..... (see *Rhus aromatica*)
Frangula caroliniana (Walter) A. Gray, 1849 ..... 440, 502
Rhamnus caroliniana Walter, 1788 .... 437, 502
Carolina Buckthorn 437, 440, 502
Franklin Tree ..... (see *Franklinia*)
Franklinia Bartram ex Marshall, 1785 ..... xxiii, 66, 81, 105, 112-14, 363, 567, 568, 610, 635
Franklin Tree 385
Franklinia alatamaha Bartram ex Marshall, 1785 112
Frasera Walter, 1788 ..... 174, 184, 267, 527, 531, 789, 903
Green Gentian 174, 527
Frasera caroliniensis Walter, 1788 ..... 174, 184, 267, 789, 903
Frasera verticillata Raf., 1828 174
Frasera walteri Michx., 1803 ..... 267, 903
American Columbo 174, 184, 267, 789, 903
Indian Lettuce 184
Frasera verticillata Raf., 1828 ..... (see *Frasera caroliniensis*)
Frasera walteri Michx., 1803 ..... (see *Frasera caroliniensis*)
Fringetree ..... (see *Chionanthus virginicus*)
Fritillaria L., 1753 ..... 396, 517
Fritillaria camschatensis (L.) Ker Gawl., 1809 ..... 396, 565
Lilium camschatcense L., 1753 ..... 396, 565
Kamchatka Fritillary 396
Fritillaria lanceolata Pursh, 1813 [1814] 1066
Purple Fritillary 1066
Fritillaria pudica (Pursh) Spreng., 1825 .....517, 1066
Lilium pudicum Pursh, 1813 [1814] 1066
Yellow Fritillary 1066
Fritillary, Kamchatka ... (see *Fritillaria camschatensis*)
Fritillary, Purple ..... (see *Fritillaria lanceolata*)
Fritillary, Yellow ..... (see *Fritillaria pudica*)
Fuchsia L., 1753 577
Fuchsia lycioides Andrews, 1800 577
Fuirena scirpoidea Michx., 1803 575
Fumaria L., 1753 ..... 424, 526, 536, 868
Fumaria cucullaria L., 1753 (see *Dicentra cucullaria*)
Fumeweed ..... (see *Corydalis*)

G

Galega virginica J. F. Gmel., 1791 185
Catgut 185
Worm Root 185
Galium triflorum Michx., 1803 868
Gallium asprellum Michx., 1803 868
Garden Onion ..... (see *Allium cepa*)
Gardenia J. Ellis, 1761 568
Gardenia lasianthus ..... (see *Gordonia lasianthus*)
Gasteromycetes [Fungi] ..... vii, 429
Gaultheria procumbens L., 1753 ..... 69, 269, 525
Mountain Tea 69
Wintergreen 269
Gaultheria prostrata W. W. Sm., 1920 525
Gaura biennis L., 1753 426
Biennial Beeblossom 426
Gayfeathers ..... (see *Liatris squarrosa*)
Gelsemium Juss., 1789 .....489, 608
Jeffersonia Brickell, 1800 .....489, 608
Gelsemium nitidum Michx., 1803 ..... (see *Gelsemium sempervirens*)
Gelsemium sempervirens (L.) J. St.-Hil., 1805 .....489, 608
Bignonia sempervirens L., 1753 489
Gelsemium nitidum Michx., 1803 608
Jeffersonia sempervirens Brickell, 1800 489
Carolina Jessamine 608
Genista L., 1753 [Fabaceae] 184
Gentian, Bottle .....(see *Gentiana andrewsii*)
Gentian, Green ..... (see *Frasera*)
Gentian, Moss ..... (see *Gentiana saponaria*)
Gentian, Prairie ..... (see *Eustoma grandiflorum*)
Gentiana L., 1753.176, 385, 413, 506, 577, 789, 811
Gentiana centaury 176
Gentiana inaperta maxim. 506
Bottle Gentian 413
Gentiana andrewsii Grisebach, 1837 1067
Bottle Gentian 1067
Gentiana aperta Maxim., 1881 506
Gentian inaperta 506
Gentiana centaury ..... (see *Gentiana*)
Gentiana inaperta ..... (see *Gentiana aperta*)
Gentiana lutea L., 1753 789
Gentiana saponaria L., 1753 ..... 385, 622, 625
Moss Gentian 385, 622, 625
Geranium maculatum L., 1753 479
Woods Geranium 479
Geranium of cultivation .... (see *Pelargonium zonale*)
Geranium, Woods ..... (see *Geranium maculatum*)
Gerardia flava L., 1753 ..... (see *Aureolaria flava*)
Gerardia pedicularia L., 1753 ..... (see *Aureolaria pedicularia*)
Giant Cane ..... (see *Arundinaria gigantea*)

Giant Cutgrass.....(see *Zizaniopsis miliacea*)
Giant Reed..... (see *Arundo donax*)
Gillenia trifoliata Moench, 1794 .....
.....(see *Porteranthus trifoliatus*)
Ginger, Canadian Wild ..... (see *Asarum canadense*)
Ginseng, American ..... (see *Panax quinquefolium*)
Ginseng, Dwarf ..... (see *Panax trifolium*)
Glade Mallow.....(see *Naphaea dioica*)
Glasswort..... (see *Salicornia*)
Glaux L., 1753.....499, 531, 569
Milkwort 499, 569
Glaux maritima L., 1753 499
Black Saltwort.....499, 569
Sea Milkwort.....499, 569
Gleditsia L., 1753.....74, 293, 503, 535
Gleditsia horrida Salisb., 1796 503
Gleditsia monosperma Walter, 1788.....503
Gleditsia triacanthos L., 1753.....74
Honey Locust.....74
Globe Thistle.....(see *Echinops sphaerocephalus*)
Glycine Willd., 1802 .....411, 540, 574
Soybean.....411
Glycine frutescens L., 1753 (see *Wisteria frutescens*)
Goatnut .....(see *Simmondsia californica*)
Goatsbeard, Virginian.....(see *Krigia amplexicaule*)
Golden Colicroot.....(see *Aletris aurea*)
Golden Currant .....(see *Ribes aureum*)
Golden Heather.....(see *Hudsonia ericoides*)
Goldencrest.....(see *Lophiola aurea*)
Goldenrod..... (see *Solidago*)
Goldenseal ..... (see *Hydrastis canadensis*)
Goldthread, Threeleaf..... (see *Coptis trifoliata*)
Goodyera pubescens (Willd.) R. Br., 1813.....377
Neottia pubescens Willd., 1805 377
Downy Rattlesnake Plantain 377
Gordonia lasianthus (L.) J. Ellis, 1771.....568
Gardenia lasianthus 568
Loblolly Bay 568
Gordonia pubescens L'Hér., 1791 385
Gossypium L., 1753 .....152, 201, 279
Cotton..... 45, 51, 100, 140, 152, 155, 202,
..... 279, 285, 299, 366-67, 437, 440,
..... 449, 682, 695, 717, 760, 797, 852
Grain Sorghum .....(see *Sorghum bicolor*)
Grape ..... (see *Vitis*)
Grape Hyacinth .....(see *Muscari botryoides*)
Grass, Barnyard .....(see *Echinochloa crus-galli*)
Grass, Broadleaf Rosette .....
..... (see *Dichanthelium latifolium*)
Grass, Catchfly .....(see *Leersia lenticularis*)
Grass, Fescue ..... (see *Festuca*)
Grass, Green Silkyscale .... (see *Anthaenantia villosa*)
Grass, Quaking .....(see *Briza*)
Grass, Rice ..... (see *Oryzopsis*)
Grass, Short-awn Meadow-foxtail.....
..... (see *Alopecurus aequalis*)
Grass, Yellow-eyed .....(see *Xyris*)
Grassleaf Arrowhead .....(see *Sagittaria graminea*)
Grasspink, Tuberous.....(see *Calopogon tuberosus*)
Gray Birch.....(see *Betula populifolia*)
Great Blue Lobelia .....(see *Lobelia siphilitica*)
Great Laurel.....(see *Rhododendron maximum*)
Great Pignut.....(see *Bunium bulbocastanum*)
Greater Dodder .....(see *Cuscuta europaea*)
Greater Purple-fringed Orchid.....
.....(see *Platanthera grandiflora*)
Green Algae .....(see *Chara*)
Green Gentian.....(see *Frasera*)
Green Pigweed ..... (see *Amaranthus hybridus*)
Green Silkyscale Grass.....(see *Anthaenantia villosa*)
Greenbrier, Coral.....(see *Smilax walteri*)
Greenwaya Gieske, 1792.....(see *Amomum*)
Grosullaria nigra (L.) Rupr., 1860(see *Ribes nigrum*)
Ground Cherry..... (see *Physalis pensylvanica*)
Groundnut ..... (see *Apios americana*)
Guaiacum officinale L., 1753.....201
Lignum vitae.....201
Guavaberry .....(see *Myristica floribunda*)
Gumbo Lily ..... (see *Mentzelia decapetala*)
Gymnocladus dioicus (L.) K. Koch, 1869.....438
Kentucky Coffee Tree 438

H

Habenaria ciliaris (L.) R. Br., 1813 .....
.....(see *Platanthera ciliaris*)
Habenaria fimbriata (Aiton) R. Br., 1805 .....
..... (see *Platanthera grandiflora*)
Habenaria psycodes (L.) Spreng., 1826 .....
..... (see *Platanthera psycodes*)
Hairgrass, Wavy ..... (see *Deschampsia flexuosa*)
Halesia carolina L., 1753 ..... 438, 604, 1054
Opossum Wood 438
Silverbell Tree..... 438, 1054
Halesia diptera Ellis, 1761 484
Two-wing Silverbell.....484
Halesia tetraptera Ellis, 1761 1054
Mountain Silverbell..... 1054
Hamamelis Gronov. ex L., 1742 612
Witch Hazel.....612
Hazelnut ..... (see *Corylus*)
Heart, Floating..... (see *Nymphoides aquatica*)
Heather, Golden .....(see *Hudsonia ericoides*)
Hedysarum gyrans L. f., 1781 [1782] .....
.....(see *Desmodium gyrans*)
Helenium autumnale L., 1753.....903
Bitterweed 903
Sneezeweed.....903
Helianthus L., 1753.....262, 414, 427, 592, 610, 620
Helianthus annuus L., 1753.....262
Sunflower.....262, 414, 502, 698, 957
Helianthus divaricatus L., 1753 ..... 414, 427, 620
Woodland Sunflower 427
Heliotropium L., 1753.....612
Hellebore, False White.....(see *Veratrum album*)
Helonias L., 1753.....63, 604, 1053
Helonias bullata L., 1753.....63, 385, 630, 1053
Swamp Pink..... 63, 1053
Hemlock.....(see *Conium maculatum*)
Hemlock, Common Water .....(see *Cicuta maculata*)
Henbane, Black.....(see *Hyoscyamus niger*)
Heuchera L., 1753 620
Heuchera americana L., 1753 175
American Alumroot.....175
Hibiscus L., 1753 ..... 259, 385, 483
Hibiscus grandiflorus Michx., 1803.....483
Swamp Rosemallow.....483
Hibiscus virginianus L., 1753.....
.....(see *Kosteletzkya virginica*)
Hickory..... (see *Carya*)
Hippo..... (see *Euphorbia*)
Hippophae L., 1753.....527
Hippophae canadensis L., 1753 .....
..... (see *Shepherdia canadensis*)

Hippuris vulgaris L., 1753 ..... 408, 425
Horse Tail 425
Mare's Tail 408
Hoary Mountain Mint .....
.....(see *Pycnanthemum incanum*)
Hoary Puccoon.....(see *Lithospermum canescens*)
Holcus bicolor L., 1771 .....(see *Sorghum bicolor*)
Holly .....(see *Ilex*)
Honey Locust ..... (see *Gleditsia*)
Honeycombhead, Oneflower .....
..... (see *Balduina uniflora*)
Hopea montana 484
Hopea tinctoria L., 1767 ... (see *Symplocos tinctoria*)
Hops ..... (see *Humulus lupulus*)
Hornbean, American .....(see *Carpinus caroliniana*)
Horned Bladderwort .....(see *Utricularia cornuta*)
Horns, Antelope .....
.....(see *Asclepias asperula* var. *capricorni*)
Horse Chestnut ..... (see *Aesculus hippocastaneum*)
Horsebalm ..... (see *Collinsonia*)
Horsesugar ..... (see *Symplocos tinctoria*)
Horsetail .....(see *Equisetum, Hippuris vulgaris*)
Houstonia L., 1753 ..... 507, 731
Bluet 507
Houstonia varians Michx., 1803 507
Hudsonia ericoides L., 1753 523
Beach Heather 523-24
Golden Heather 523
Hudsonia tomentosa Nutt., 1818 523-24
Humulus lupulus L., 1753 ..... 187, 196-97
Lupulus communis Gaertn., 1788 922
Hops 187, 196-97, 922
Hyacinth, Common Grape (see *Muscari botryoides*)
Hyacinthus botryoides L., 1753 .....
..... (see *Muscari botryoides*)
Hydrangea arborescens L., 1753 503
Hydrangea glauca 503
Hydrangea glauca ..... (see *Hydrangea arborescens*)
Hydrastis canadensis L., 1759 267
Goldenseal 267
Hydropeltis Michx., 1803 ..... 496, 526
Hydropeltis purpurea Michx., 1803 .....
..... (see *Brasenia schreberi*)
Hydrophyllum canadense L., 1753 502
Bluntleaf Waterleaf 502
Hydrophyllum virginianum L., 1753 502
Shawnee Salad 502
Hylotelephium telephioides (Michx.) H. Ohba, 1977
..... 502, 611
Sedum telephioides Michx., 1803 ..... 502, 611
Stone Crop 502
Hymenocallis Salisb., 1812 ..... 409, 503, 1014
Spiderlily 503, 1014
Hymenocallis caroliniana (L.) Herb., 1821 503
Pancratium carolinianum L., 1753 503
Hymenocallis nutans Baker, 1888 1014
Pancratium fluitans Fraser ex Schult. f. ... 1014
Hyoscyamus niger L., 1753 ..... 93, 98, 185
Black Henbane .....
..... xxi, 85, 98, 185, 457, 527, 851
Hyoseris L., 1737 .....(see *Krigia*)
Hyoseris virginica L., 1753 ..... (see *Krigia virginica*)
Hypericum L., 1753 ..... 20, 427, 527, 569, 895
Hypericum kalmianum L., 1753 427
Kalm's St. John's Wort 427
Hypericum mutilum L., 1753 569
Hypericum perfoliatum L., 1767 895
Hypericum perforatum L., 1753 ..... 20, 336
St. John's Wort 20, 336
Hypoxis erecta L., 1759 426
Star of Bethlehem 426
Hyssop, Blue Water .....(see *Bacopa caroliniana*)

I

Icaco Coco Plum..... (see *Chrysobalanus icaco*)
Ignatia amara L. f., 1781 172
Faba indica 172
Faba St. Ignatii 172
Ignatius Bean 172
Ignatius Bean..... (see *Ignatia amara*)
Ilex L., 1753 ..... 263, 524, 752, 925
Holly 492
Ilex cassine L., 1753 263
Dahoon 263
Ilex verticillata (L.) Gray, 1753 752
Prinos verticillus L., 1753 267
Black Alder 752
Winterberry 752
Illicium L., 1759 ..... 82, 412, 434, 524
Anisetree 82, 524
Illicium floridanum J. Ellis, 1770 ..... 82-83, 524
Florida Anisetree 82, 524
Illicium parviflorum Michx. ex Vent., 1799.....
..... 82, 412, 524
Yellow Anisetree 82, 524
Impatiens noli-tangere L. [Balsaminaceae] ..286, 410
Indian Cucumber .....(see *Medeola virginiana*)
Indian Jack-in-the-Pulpit .. (see *Arisaema triphyllum*)
Indian Paintbrush..... (see *Castilleja coccinea*)
Indian Physic ..... (see *Porteranthus*)
Indian Pinkroot ..... (see *Spigelia marilandica*)
Indian Rosewood ..... (see *Dalbergia*)
Indian Shot.....(see *Canna indica*)
Indian Tobacco.....(see *Nicotiana quadrivalis*)
Indian Turnip..... (see *Arisaema triphyllum*)
Indigo..... (see *Indigofera*)
Indigo, Yellow Wild.....(see *Baptisia tinctoria*)
Indigofera L., 1753 184
Indigo 66, 148, 461, 676, 892
Ipecac.....(see *Euphorbia*)
Ipomoea batatas (L.) Lam., 1793 ..... 627, 909
Convolvulus batatas L., 1753 627
Batata hispanorum 909
Sweet Potato 627, 836, 909
Ipomoea coccinea L., 1753 611
Scarlet Morning Glory 611
Ipomoea purga (Wender.) Hayne, 1833 .....
.....(see *Exogonium purga*)
Iresine celosia L., 1759 ..... (see *Celosia paniculata*)
Iridaceae, African..... (see *Antholyza cunonia*)
Iris L., 1753 ..... 268, 509, 517, 1030
Iris fulva Kew Gawl., 1812..... 509, 517, 1030
Iris cuprea Pursh, 1814 ..... 509, 517
Copper-colored Iris 509, 1030
Iris prismatica Pursh ex Ker Gawl., 1814 ..509, 1030
Slender Blue Iris 509
Iris, Copper-colored.....(see *Iris fulva*)
Iris, Slender Blue .....(see *Iris prismatica*)
Irish Potato.....(see *Solanum tuberosum*)
Isanthus Michx., 1803 623
Isanthus brachiatus (L.) Britton, Stern & Poggenb., 1888 623
False Pennyroyal 623

Isotria medeoloides (Pursh) Raf., 1838 ..... (see *Pogonia verticillata*)
Ivy, Poison..... (see *Toxicodendron radicans*)
Ixia coelestina W. Bartram, 1791 ..... (see *Calydorea coelestina*)

J

Jack-in-the-Pulpit, Indian.. (see *Arisaema triphyllum*)
Jalap ..... (see *Exogonium purga*)
Jateorhiza Miers, 1849..... 184, 201
Bitter Tonic 184
Colombo..... 184, 201
Jateorhiza palmata (Lam.) Miers, 1849..... 184, 201
Java Bean..... (see *Senna obtusifolia*)
Jeffersonia Barton, 1793 [Berberidaceae] ... 276, 292 .....303, 354, 363, 428, 498, 502, 527, 567, ...580-81, 594, 603-04, 608, 879, 1052
Jeffersonia Brickell, 1800 ..... (see *Gelsemium*)
Jeffersonia bartonis Michx., 1803 ..... (see *Jeffersonia diphylla*)
Jeffersonia binata Barton, 1793..... (see *Jeffersonia diphylla*)
Jeffersonia diphylla (L.) Pers., 1805..... 276, 292, ...354, 363, 428, 498, 502, 527, 581, 594, 1052
Jeffersonia bartonis Michx., 1803..... .....276, 428, 498, 608
Jeffersonia binata Barton, 1793 ..... 276, 292, 428, 527, 603
Jeffersonia lobata Nutt., 1834 276
Jeffersonia odorata Raf., 1830 276
Podophyllum diphyllum L., 1753 ....276, 292, 303, 354, 406, 502, 580, 594, 879
Twinleaf.....303, 354, 363, 428, ... 498, 502, 527, 594, 1052
Jeffersonia lobata Nutt., 1834..... (see *Jeffersonia diphylla*)
Jeffersonia odorata Raf., 1830..... (see *Jeffersonia diphylla*)
Jeffersonia sempervirens Brickell, 1800 ..... (see *Gelsemium sempervirens*)
Jeffersonia virginica Barton ..... (see *Podophyllum diphyllum*)
Jessamine, Carolina ..(see *Gelsemium sempervirens*)
Jimsonweed..... (see *Datura stramonium*)
Jojoba ..... (see *Simmondsia californica*)
Juglans L., 1753 ..... 69, 268, 295, 296, 442, 580-81
Walnut.....295, 437, 440, 442
Juglans cinerea L., 1759 ..... 268, 581
Butternut..... 268
Juglans nigra L., 1753 295
Black Walnut..... 295
Juncus campestris L., 1753..... ..... (see *Cyperella campestris*)
Jungermannia L., 1753 [Liverwort]..... 429
Juniperus L., 1753 296
Juniper 196, 610, 796
Red Cedar..... 296, 610
Juniperus sabina L., 1753.....582, 805, 932
Justiceweed..... (see *Eupatorium leucolepis*)

K

Kalmia L., 1753 .....196, 887
Laurel..... 887
Kalmia angustifolia L., 1753..... ..... 268, 581, 680, 886, 933
Lambkill 268
Sheep-kill..... 680
Sheep Laurel..... 268
Kalmia latifolia L., 1753..... 69, 196, ... 268, 278, 349, 680, 706, 932, 933
Mountain Laurel 69, 196, 197, 268, 680, 706, 933
Kamchatka Fritillary .... (see *Fritillaria camschatensis*)
Kentucky Coffee Tree.... (see *Gymnocladus dioicus*)
Klamathweed.....(see *Hypericum perfoliatum*)
Kosteletzkya virginica (L.) C. Presl. ex A. Gray, 1849 483
Hibiscus virginianus L., 1753 483
Rose Mallow..... 483
Krigia Schreb., 1791 .....410, 427, 582, 610
Hyoseris L., 1737 ..... 410, 582, 610
Krigia virginica (L.) Willd., 1803 .....410, 427, 582, 610
Hyoseris virginica L., 1753 582
Trapogon virginicus L., 1753 ..... 410, 427, 610
Virginia Dwarf Dandelion 582
Virginian Goatsbeard..... 427
Kuhnia L., 1763..... 486

L

Labrador Tea, Marsh ..... (see *Ledum palustre*)
Lacathea Salisb., 1806 [Theaceae]..... 567, 568
Lacathea florida Salisb., 1806 568
Lacinaria spicata (L.) Kuntze, 1891 265
Liatris spicata (L.) Willd., 1803.....265
Serratula spicata L., 1753.....265
Lactuca L., 1753.....410
Scariola F. W. Schmidt, 1795 410
Lady Slipper ..... (see *Cypripedium*)
Lady Slipper, Yellow..... (see *Cypripedium acaule*)
Lagerstroemia indica L., 1759 503
Crape Myrtle 503
Lambkill..... (see *Kalmia angustifolia*)
Larch, American ..... (see *Larix americana*)
Larix americana Michx., 1803 425
Pinus pendula Aiton, 1789 425
American Larch 425
Larix decidua (L.) P. Mill.....581
European Larch 581
Laurel, Great .....(see *Rhododendron maximum*)
Laurel, Mountain..... (see *Kalmia latifolia*)
Laurel, Sheep .....(see *Kalmia angustifolia*)
Laurus L., 1753 .....131, 268, 502, 921
Laurus benzoin L., 1753.....(see *Lindera benzoin*)
Laurus borbonia L., 1753 ..... (see *Persea borbonia*)
Laurus sassafras L., 1753 .....(see *Sassafras albidum*)
Leatherwood..... (see *Dirca palustris*)
Ledum palustre L., 1753.....502
Marsh Labrador Tea.....502
Leersia Sol. ex Sw., 1788 909
Cutgrass 576
Leersia lenticularis Michx., 1803.....910
Catchfly Grass 910
Leontodon taraxacum L., 1753 ....(see *Taraxacum officinale*)
Lepidodendron [fossil Lycopsida]..... 777, 778, 916
Leptorchis loeselii (L.) Macmill, 1793..... .....(see *Liparis loeselii*)
Lespedeza virginica (L.) Britton, 1893 582
Medicago virginica L., 1753.....582

Lesser Purple-fringed Orchid ..... (see *Platanthera psycodes*)
Lettuce 184, 491
Leucanthemum vulgare Tourn. ex Lam, 1778 ... 336
Chrysanthemum leucanthemum L., 1753 . 336
Chrysanthemum 276, 407, 503
Lewisia Pursh, 1813 [1814] ..... xxiv, 548
Lewisia rediviva Pursh, 1813 [1814] ..... xxiv, 548
Bitterroot ..... xxiv, 548
Liatris Gaertner ex Schreb., 1791 ..... 265, 616, 698
Liatris scariosa (L.) Willd., 1803 616
Liatris squarrosa (L.) Michx., 1803 ..... 616, 698
Gayfeathers 698
Scaly Blazingstar 698
Licoriceweed ..... (see *Scoparia*)
Lignum vitae ..... (see *Guaiacum officinale*)
Ligustrum vulgare L., 1753 131
Wild Privet 131
Lilac ..... (see *Syringa vulgaris*)
Lilium camschatcense L., 1753 ..... (see *Fritillaria camschatensis*)
Lilium canadense L., 1753 426
Canada Lily 426
Lilium canadense var. ***editorum*** Fernald, 1943 1065
Lilium carolinianum Michx., 1803 ..... 487, 489
Carolina Lily 487
Lilium catesbaei Walter, 1788 ..... 488, 489
Pine Lily 488
Lilium pudicum Pursh, 1814 .. (see *Fritillaria pudica*)
Lilium superbum L., 1762 ..... 339, 424
Turk's Cap Lily 424
Lily of the Valley ..... (see *Convallaria*)
Lily, Atamasco ..... (see *Zephyranthes atamasca*)
Lily, Canada ..... (see *Lilium canadense*)
Lily, Carolina ..... (see *Lilium carolinianum*)
Lily, Elegant Mariposa ..... (see *Calochortus elegans*)
Lily, Pine ..... (see *Lilium catesbaei*)
Limodorum 444
Limodorum tuberosum L., 1753 ..... (see *Calopogon tuberosus*)
Linaria vulgaris Hill, 1756 ..... 336, 452
Antirrhinum linaria L., 1753 336
Butter and Eggs 336
Flax Weed 336
Yellow Toad-flax 452
Lindera benzoin (L.) Blume, 1851 ..... 196, 268
Laurus benzoin L., 1753 ..... 268, 921
Allspice Bush 268
Spicewood 268
Linnaea L., 1753 527
Linnaea borealis L., 1753 ..... 569, 580
American Twinflower 580
Liparis loeselii (L.) Rich., 1817 [1818] 870
Leptorchis loeselii (L.) MacMill., 1893 870
Malaxis correana W. P. C. Barton, 1815 ... 870
Yellow Wide-lip Orchid 870
Liquidambar styraciflua L., 1753 268
Sweetgum 268
Liriodendron L., 1753 ..... 137, 200, 283, 884, 893, 931
Liriodendron tulipifera L., 1753 ..... 283, 888, 893
Tulip Poplar 283, 893
Tulip Tree 197, 888
Yellow Poplar 283, 893
Lithospermum L., 1753 36
Lithospermum canescens (Michx.) Lehm. 1818 598
Hoary Puccoon 598
Live Oak ..... (see *Quercus virginiana*)
Liverwort ... (see *Jungermannia, Marchantia, Porella*)
Lobelia L. 1753 ..... 83, 184, 265, 267, 268, 286, 339, 410, 411
Lobelia cardinalis L., 1753 ..... 268, 286, 339, 410
Cardinal Flower 268, 286, 410
Lobelia siphilitica L., 1753 ..... 83, 184, 267-68, 410
Great Blue Lobelia 83
Lobelia, Great Blue ..... (see *Lobelia siphilitica*)
Loblolly Bay ..... (see *Gordonia lasianthus*)
Loblolly Pine ..... (see *Pinus taeda*)
Locust, Black ..... (see *Robinia pseudoacacia*)
Locust, Clammy ..... (see *Robinia viscosa*)
Locust, Honey ..... (see *Gleditsia*)
Lombardy Poplar ..... (see *Populus nigra*)
Lonicera media Murr., 1776 385
Loosestrife ..... (see *Lysimachia*)
Lophiola aurea Ker Gawl., 1813 ..... 630, 1059
Conostylis americana Pursh, [1813] 1814 .. 630
Goldencrest 630, 1059
Lotus ..... (see *Nelumbo*)
Low Watermilfoil ..... (see *Myriophyllum humile*)
Ludwigia alternifolia L., 1753 425
Bushy Seedbox 425
Lupinus perennis L., 1753 647
Luziola fluitans (Michx.) Terrell & H. Rob., 1974 576
Zizania fluitans Michx., 1803 576
Southern Water Grass 576
Lychnis viscosa Scop., 1771 1056
Lyonia Nutt., 1818 ..... 540, 576
Lyrate Rockcress ..... (see *Arabis lyrata*)
Lysimachia L., 1753 527

M

Maclura Nutt., 1818 ..... 540, 542
Maclura pomifera (Raf.) C. K. Schneid., 1906 ..... 541-42, 761, 1015
Ioxylon pomiferum Raf., 1817 542
Bois d'arc 541
Osage Orange 541-42, 761, 1015
Madder ..... (see *Rubia tinctoria*)
Magnolia ..... (see *Magnolia*)
Magnolia L., 1753 ..... 195, 196, 197, 402, 434, 442, 482, 556, 565, 614, 635, 897, 925, 930
Magnolia acuminata L., 1759 ..... 148, 201, 435, 604, 925, 1023, 1032
Cucumber Tree 435, 1023, 1032
Magnolia conspicua Salisb., 1806 ..... 565, 614
Magnolia denudata Dest., 1792 614
Magnolia glauca L., 1759 930
Magnolia grandiflora L., 1759 482
Magnolia macrophylla Michx., 1803 262
Bigleaf Magnolia 262
Umbrella Magnolia 262, 897
Magnolia tripetala L., 1759 ..... 201, 442, 604, 608, 635, 925, 1023, 1032
Umbrella Magnolia 897, 1031
Magnolia virginiana L., 1753 201
Sweetbay 201
Magnolia, Bigleaf ..... (see *Magnolia tripetala*)
Magnolia, Umbrella ..... (see *Magnolia tripetala*)

Mahonia Nutt., 1818 [Berberidaceae] 540
Maidenhair Spleenwort ..... (see *Asplenium trichomanes*)
Malabar Plum ..... (see *Syzygium jambos*)
Malaxis correana W. P. C. Barr., 1815 ..... (see *Liparis loeselii*)
Malaysian Apple ..... (see *Syzygium malaccense*)
Mallow, Glade ..... (see *Napheae dioica*)
Mallow, Musk ..... (see *Malva moschata*)
Mallow, Rose ..... (see *Kosteletzkya virginica*)
Malus Mill., 1754 721
Apple 675, 717, 721
Malus coronaria (L.) Mill., 1753 675
Crabapple 675
Malva L., 1753 425
Mallow 425
Malva moschata L., 1753 454
Musk Mallow 454
Mandrake ..... (see *Podophyllum peltatum*)
Manfreda virginica (L.) Salisb. ex Rose, 1903 610
Agave virginica L., 1753 610
False Aloe 610
Maple, Red ..... (see *Acer rubrum*)
Maple, Silver ..... (see *Acer saccharinum*)
Maple, Sugar ..... (see *Acer saccharum*)
Marchantia L., 1753 [Liverwort] 429
Mare's Tail ..... (see *Hippuris*)
Marigold, Marsh ..... (see *Caltha palustris*)
Marsh Labrador Tea ..... (see *Ledum palustre*)
Marsh Marigold ..... (see *Caltha palustris*)
Marshallia Schreb., 1791 496
Persoonia Michx., 1805 496
Martynia proboscidea Gloxin, 1777 622
Unicorn Plant 622
Maryland Senna ..... (see *Senna marilandica*)
Matthiola incana (L.) R. Br., 1812 427
Cheiranthus incanus L., 1753 427
Stock July-Flower 427
Mayaca Aubl., 1775 488
Syena Schreb., 1789 488
Bogmoss 488
Mayaca ..... (see *Mayaca*)
Mayapple ..... (see *Podophyllum peltatum*)
Maypops ..... (see *Passiflora incarnata*)
Meadow Beauty, Common ..... (see *Rhexia virginica*)
Meadow Saxifrage ..... (see *Saxifraga granulata*)
Meadowparsnip, Purple ..... (see *Thaspium trifoliatum*)
Meadowrue, Early ..... (see *Thalictrum dioicum*)
Medeola virginiana L. 426
Medeola virginica 426
Indian Cucumber 426
Medicago virginica L., 1753 ..... (see *Lespedeza virginica*)
Melanthium L., 1753 ..... 424, 488, 507, 527, 581
Bunchflower 424, 527, 581
Melanthium dioicum Walter, 1788 ..... (see *Chamaelirium carolinianum*)
Melanthium muscitoxicum Walter, 1788 ..... (see *Zygadenus muscitoxicum*)
Melanthium racemosum Walter, 1788 527
Melanthium virginicum L., 1753 582
Virginia Bunchflower 582
Melia azedarach L., 1753 ..... 269, 419
Chinaberry 196, 419
Pride-of-India 269
Menispermum canadense L., 1753 988
Moonseed 988
Menispermum carolinum L., 1753 503
Mentzelia L., 1753 ..... 417, 539, 572, 578, 827, 837-38
Mentzelia decapetala (Pursh) Urban & Gilg, 1894 ..... 519, 578, 827, 837
Bartonia decapetala Pursh, 1812 ..... 519, 578, 827, 837
Bartonia ornata Pursh, 1814 837
Bartonia polypetala Nutt., 1812 ..... 539, 837
Bartonia superba Nutt., 1812 ..... 539, 837
Evening Starlily 539
Gumbo Lily 539
Menyanthes L., 1753 613
Bogbean 613
Menyanthes trifoliata L., 1753 1060
Menziesia Sm., 1791 ..... 507, 517
Menziesia azaleoides 507, 517
Menziesia ferruginea A. Gray, 1872 517
Rusty Menziesia 517
Menziesia globularis Salisb., 1805 517
Menziesia, Rusty ..... (see *Menziesia ferruginea*)
Mespilus canadensis L., 1753 ..... (see *Amelanchier canadensis*)
Metasequoia Miki ex Hu & W. C. Cheng, 1948 520
Dawn Redwood 520
Metopium toxiferum (L.) Krug & Urb., 1896 181
Florida Poisontree 181
Mexican Euphorbia ..... (see *Euphorbia heterophylla*)
Milium effusum L., 1753 574
American Millet 574
Milkberry ..... (see *Chiococca*)
Milkweed, Clasping ..... (see *Asclepias amplexicaulis*)
Milkwort ..... (see *Glaux*)
Milkwort, Sea ..... (see *Glaux maritima*)
Milkwort, Whorled ..... (see *Polygala verticillata*)
Millet, American ..... (see *Milium effusum*)
Mimosa L., 1737 ..... 385, 502, 505
Mimosa indica Pers., 1806 ..... (see *Acacia farnesiana*)
Mimosa virgata L., 1753 505
Mimulus L., 1753 ..... 454, 577, 1028
Mimulus aurantiacus Curtis, 1796 ..... 577, 1028
Sticky Monkeyflower 1028
Mimulus moschatus Douglas, 1828 454
Musk Monkeyflower 454
Mint, Appalachian Mountain ..... (see *Pycnanthemum flexuosum*)
Mint, Hoary Mountain ..... (see *Pycnanthemum incanum*)
Mitchella L., 1753 ..... 605, 626
Mitella L., 1753 ..... 283, 620
Mitella diphylla L., 1753 620
Miterwort 620
Miterwort ..... (see *Mitella diphylla*)
Mnesithea cylindrica (Michx.) de Koning & Sosef, 1986 576
Tripsacum cylindricum Michx., 1803 576
Mole Plant ..... (see *Euphorbia lathyris*)
Mollugo verticillata L., 1753 409
Carpetweed 409
Monarda L., 1753 ..... 589, 626
Monarda didyma L., 1753 569
Scarlet Beebalm 569
Monkeyflower, Musk ..... (see *Mimulus moschatus*)
Monkshood ..... (see *Aconitum*)

Monochoria hastata (L.) Solms, 1883 267
Pontederia hastata L., 1753 267
Arrowleaf Falsepickerelweed 267
Moonseed ..... (see *Menispermum*)
Moosewood ..... (see *Dirca palustris*)
Morella cerifera (L.) Small, 1903 267
Myrica cerifera L., 1753 267
Bayberry 179, 180, 267, 675
Wax Myrtle 267
Morning Glory, Scarlet ..... (see *Ipomoea coccinea*)
Morning Glory, Wild ..... (see *Calystegia sepium*)
Moss [Bryophyte] ..... (see *Bryum, Bartramia, Polytrichum, Sphagnum*)
Moss Gentian ..... (see *Gentiana saponaria*)
Moss, Spanish ..... (see *Tillandsia usneoides*)
Moss, Sphagnum ..... (see *Sphagnum*)
Mountain Balm ..... (see *Cunila origanoides*)
Mountain Camellia ..... (see *Stewartia ovata*)
Mountain Laurel ..... (see *Kalmia latifolia*)
Mountain Silverbell ..... (see *Halesia tetraptera*)
Mountain Tea ..... (see *Gaultheria procumbens*)
Muhlenbergia Schreb., 1789 600
Muhlenbergia schreberi J. F. Gmelin 574
Nimblewill Muhly 574
Muhly, Nimblewill ..... (see *Muhlenbergia schreberi*)
Mulberry 434, 437, 717
Mullein, White ..... (see *Verbascum lychnitis*)
Muscari botryoides (L.) P. Mill., 1768 ..... 452, 453
Hyacinthus botryoides L., 1753 ..... 452, 453
Common Grape Hyacinth 452, 453
Musci [Mosses] 429, 488
Moss 47, 127, 277, 428, 684, 798, 899, 944
Musk Mallow ..... (see *Malva moschata*)
Musk Monkeyflower ..... (see *Mimulus moschatus*)
Muskroot ..... (see *Adoxa moschatellina*)
Mylocaryum ligustrinum Willd., 1809 576
Myosotis L., 1753 612
Myrica cerifera L., 1753 ..... (see *Morella cerifera*)
Myrica gale L., 1753 524
Sweetgale 524
Myriophyllum L., 1753 ..... 489, 520
Myriophyllum humile (Raf.) Marong, 1891 520
Burshia humilis Raf., 1808 520
Low Watermilfoil 520
Myristica floribunda Wall., 1838 606
Guavaberry 606
Myrtle, Crape ..... (see *Lagerstroemia indica*)
Myrtle, Wax ..... (see *Morella cerifera*)

N

Napaea hermaphrodita L., 1753 ..... (see *Sida hermaphrodita*)
Napea scabra dioica ..... (see *Naphaea dioica*)
Naphaea dioica L., 1753 ..... 414, 502
Glade Mallow 414
Napea scabra dioica 502
Narrow-spathed Skunk Cabbage ..... (see *Symplocarpus angustispatha*)
Narthecium americanum Ker Gawl., 1812 1059
Narthecium pubens Michx., 1803 ..... (see *Tofieldia pubens*)
Nasturium ..... (see *Tropaeolum*)
Needle Palm ..... (see *Rhapidophyllum hystrix*)
Nelumbium Juss., 1789 ..... (see *Nelumbo*)
Nelumbo Adans., 1763 417
Nelumbium Juss., 1789 ..... 417, 532
Lotus 417, 532
Neottia pubescens Willd., 1805 ..... (see *Goodyera pubescens*)
Nerium oleander L., 1753 909
Oleander 909
Nerveray, Pineland ..... (see *Tetragonotheca helianthoides*)
Nicotiana L., 1753 ..... 46, 269, 426
Tobacco 46, 134, 138, 153, 216, 268-69, 294, 410-11, 426, 439, 440, 477-78, 509, 547, 635, 676-77, 681, 895, 928
Nicotiana quadrivalis Pursh, 1814 46
Indian Tobacco 46
Nicotiana tabacum L., 1753 ..... 269, 426
Tobacco 426
Nidularia campanulata Sibth., 1792 [Fungi] 429
Nightshade ..... (see *Solanum*)
Nimblewill Muhly ..... (see *Muhlenbergia schreberi*)
Ninebark ..... (see *Physocarpus opulifolia*)
Norwegian Cinquefoil ..... (see *Potentilla norvegica*)
Nymphaea L., 1753 ..... 383, 417, 597
Nymphaea alba L., 1753 383
European White Waterlily 383
Nymphoides aquatica (J. F. Gmelin) Kuntze, 1891 1060
Floating Heart 1060
Nyssa integrifolia Aiton, 1769 723

O

Oak ..... (see *Quercus*)
Oak, Live ..... (see *Quercus virginiana*)
Oak, Running ..... (see *Quercus pumila*)
Oak, White ..... (see *Quercus alba*)
Oat, Purple False ..... (see *Trisetum melicoides*)
Oats ..... (see *Avena mollis*)
Oldenlandia L., 1753 588
Olea europaea L., 1753 ..... 419, 503
Olive 258, 419, 422, 476
Oleander ..... (see *Nerium oleander*)
Olive ..... (see *Olea europaea*)
Oneflower Honeycombhead ..... (see *Balduina uniflora*)
Onion, Garden ..... (see *Allium cepa*)
Ophyris hyemalis ..... (see *Aplectrum hyemale*)
Opium 90, 146-47, 149-50, 153, 173, 186, 188, 200, 422, 455, 477, 635, 797, 921-22, 926, 932, 934
Opium Poppy ..... (see *Papaver somniferum*)
Opuntia P. Mill., 1754 488
Opuntia Cactus 488
Opuntia Cactus ..... (see *Opuntia*)
Orange, Osage ..... (see *Maclura pomifera*)
Orange, Scentless Mock ..... (see *Philadelphus inodorus*)
Orchid, Adam-and-Eve ..... (see *Aplectrum hyemale*)
Orchid, Calypso ..... (see *Calypso borealis*)
Orchid, Greater Purple-fringed ..... (see *Platanthera grandiflora*)
Orchid, Lesser Purple-fringed ..... (see *Platanthera psycodes*)
Orchid, Snakemouth ..... (see *Pogonia ophioglossoides*)
Orchid, Yellow Wide-lip ..... (see *Liparis loeselii*)
Orchid, Yellow-fringed ..... (see *Platanthera ciliaris*)
Orchis L., 1753 ..... 278, 424, 503-05, 525
Orchis ciliaris L., 1753 ..... (see *Platanthera ciliaris*)

Orchis fimbriata Aiton, 1789 ..... (see *Platanthera grandiflora*)
Ornithogalum L., 1753 453
Ornithogalum umbellatum L., 1753 452-53
Star-of-Bethlehem 452-53
Orobanche L., 1753 ..... 527-28, 792
Orobanche virginiana L., 1753 ..... (see *Conopholis americana*)
Orobanche virginica ..... (see *Conopholis americana*)
Oryza sativa L., 1753 417
Cultivated Rice 183, 258-59, 417, 718
Oryzopsis Michx., 1803 574
Dilepyrum Raf., 1808 574
Rice Grass 574
Osage Orange ..... (see *Maclura pomifera*)
Osmorhiza Raf., 1819 535
Sweetroot 535
Oxalis acetosella L., 1753 ..... 562, 731
Wood Sorrel 562, 731
Oxalis corniculata L., 1753 562
Yellow Wood Sorrel [European] 562

P

Paeonia moutan Sims, 1808 565
Chinese Peony 565
Paintbrush, Indian ..... (see *Castilleja coccinea*)
Painted Cup, American ..... (see *Castilleja coccinea*)
Palm ..... (see *Euterpe*)
Palm, Betel ..... (see *Areca catechu*)
Palm, Date ..... (see *Phoenix dactylifera*)
Palm, Needle ..... (see *Rhapidophyllum hystrix*)
Palm, Royal ..... (see *Roystonia regia*)
Palmetto ..... (see *Sabal palmetto*)
Panax L., 1753 ..... 266, 355, 434, 580
Panax quinquefolium L., 1753 266
American Ginseng 266
Panax trifolium L., 1753 ..... 355, 581
Dwarf Ginseng 355
Pancratium L., 1753 ..... 503, 505, 527
Pancratium caroliniamum L., 1753 ..... (see *Hymenocallis caroliniamum*)
Pancratium fluitans Fraser ex Schult. f., 1830 ..... (see *Pancratium nutans*)
Pancratium nutans Ker Gawl., 1817 1014
Pancratium fluitans Fraser ex Schult. f., 1830 1014
Panicum crus-galli L., 1754 ..... (see *Echinochloa crus-galli*)
Panicum heterophyllum Bosc. ex Nees, 1829 573
Panicum latifolium L., 1753 ..... (see *Dichanthelium latifolium*)
Papaver L., 1754 868
Papaver somniferum L., 1753 ..... 173, 422, 455
Opium Poppy 422, 455
Parrot Pitcherplant ..... (see *Sarracenia psittacina*)
Paspalum plicatulum Michx., 1803 575
Paspalum praecox Walter, 1788 575
Passiflora L., 1753 ..... 409-10, 427, 521
Passiflora incarnata L., 1753 ..... 409-10, 427
Maypops 427
Purple Passionflower 409-10, 427
Passionflower, Purple ..... (see *Passiflora incarnata*)
Paullinia carthagenensis Jacq., 1768 ..... (see *Serjania curassavica*)
Pawpaw ..... (see *Asimina triloba*)
Pea, Butterfly ..... (see *Clitoria mariana*)
Pea, Showy Partridge ..... (see *Chamaecrista fasciculata*)
Pear ..... (see *Pyrus communis*)
Pelargonium zonale (L.) L'Hér., 1789 313
Geranium of cultivation 313
Pennyroyal, False ..... (see *Isanthus brachiatus*)
Pentstemon pubescens Sol. in Aiton, 1789 286
Chelone hirsuta L., 1753 286
Peony, Chinese ..... (see *Paeonia moutan*)
Pepperbush ..... (see *Clethra acuminata*)
Persea borbonia (L.) Spreng., 1825 ..... 502, 524
Laurus borbonia L., 1753 502
Redbay 502, 524
Persimmon ..... (see *Diospyros*)
Persoonia Michx., 1805 ..... (see *Marshallia*)
Peziza lentifera Huds., 1778 [Fungi] 429
Phalaris villosa Michx., 1803 ..... (see *Anthaenantia villosa*)
Phaseolus L., 1753 [Fabaceae] 411
Philadelphia Fleabane ..... (see *Erigeron philadelphicus*)
Philadelphus inodorus L., 1753 426
Scentless Mock Orange 426
Phoenix dactylifera L., 1753 401
Date Palm 401
Phyllitis scolopendrium (L.) Newm., 1844 ..... (see *Asplenium scolopendrium*)
Phyllitis scolopendrium var. *americanum* Fernald, 1935 ..... (see *Asplenium scolopendrium*)
Physalis pensylvanica L., 1762 426
Ground Cherry 426
Physic, Indian ..... (see *Porteranthus*)
Physocarpus opulifolia (L.) Maxim., 1879 74
Spiraea opulifolia L., 1753 74
Ninebark 74
Phytolacca L., 1753 ..... 360, 383, 426, 449, 919, 931
Phytolacca americana L., 1753 ..... 426, 449-50
Phytolacca decandra L., 1762 ..... 383, 426, 449-50, 931
American Pokeweed 197, 426, 449-50
Phytolacca decandra L. .. (see *Phytolacca americana*)
Pickleweed ..... (see *Salicornia*)
Piedmont Rhododendron ..... (see *Rhododendron minus*)
Pigeon Wings, Atlantic ..... (see *Clitoria mariana*)
Pignut, Great ..... (see *Bunium bulbocastanum*)
Pigweed, Green ..... (see *Amaranthus hybridus*)
Pimpernel, Brook ..... (see *Veronica anagallis-aquatica*)
Pimpernel, Water ..... (see *Samolus valerandi*)
Pinckneya bracteata (Bartram) Raf., 1827 732
Fevertree 732
Pinckneya pubens Michx., 1803 ..... 488, 731
Pine Barren Daisy ..... (see *Sclerolepis uniflora*)
Pine Lily ..... (see *Lilium catesbaei*)
Pine, Australian ..... (see *Casuarina equisetifolia*)
Pine, Australian ..... (see *Casuarina*)
Pine, Loblolly ..... (see *Pinus taeda*)
Pineland Nerveray ..... (see *Tetragonotheca helianthoides*)
Pink, Swamp ..... (see *Helonias bullata*)
Pinkroot, Indian ..... (see *Spigelia marilandica*)
Pinks ..... (see *Dianthus*)
Pinus L., 1753 ..... 425, 580-81
Pinus larix L., 1753 581
Pinus pendula Aiton, 1789 ..... (see *Larix americana*)
Pinus taeda L., 1753 581
Loblolly Pine 581

Pipsissewa ..... (see *Chimaphila umbellata*)
Pitcherplant..... (see *Sarracenia*)
Pitcherplant, Parrot ..... (see *Sarracenia psittacina*)
Pitcherplant, Yellow ..... (see *Sarracenia flava*)
Plant, Unicorn ..... (see *Martynia proboscidea*)
Plantago major L., 1753 ..... 181, 612
Broadleaf Plantain 181
Plantain, Broadleaf ..... (see *Plantago major*)
Plantain, Downy Rattlesnake ..... (see *Goodyera pubescens*)
Platanthera ciliaris (L.) Lind., 1835 ..... 505, 525
Orchis ciliaris L., 1753 ..... 505, 525
Habenaria ciliaris (L.) R. Br. 1813 ..... 505, 525
Yellow-fringed Orchid 525
Platanthera grandiflora (Bigelow) Lindl., 1835 ..... 503, 525
Habenaria fimbriata (Aiton) R. Br., 1805 ..... 503, 525
Orchis fimbriata Aiton, 1789 ..... 503, 525
Greater Purple-fringed Orchid 525
Platanthera psycodes (L.) Lindl., 1835 427
Habenaria psycodes (L.) Spreng., 1826 427
Lesser Purple-fringed Orchid 427
Platanus L., 1753 ..... 277, 741
Buttonwood 741
Sycamore 141, 437, 439-40, 443, 741, 897
Platanus occidentalis L., 1753 741
Pleopeltis polypodioides (L.) Andrews & Windham, 1993 377
Acrostichum polypodioides L., 1753 377
Polypodium polypodioides (L.) Watt., 1867 377
Resurrection Fern 377
Pleurisy Root ..... (see *Asclepias tuberosa*)
Plum, Beach ..... (see *Prunus maritima*)
Plum, Icaco Coco ..... (see *Chrysobalanus icaco*)
Plum, Malabar ..... (see *Syzygium jambos*)
Poa stolonifera Muhl., 1817 573
Podophyllum L., 1753 ..... 70, 182, 184, 265, 268, 276, 292, 303, 354, 406, 424, 426, 502, 580-81, 592, 594, 603, 609, 879
Podophyllum diphyllum L., 1753 ..... (see *Jeffersonia diphylla*)
Podophyllum peltatum L., 1753 ..... 70, 182, 265, 268, 276, 303, 424, 426, 581, 592
Mandrake 265, 276, 426
Mayapple 265, 276, 303, 426
Wild Lemon 265, 426
Pogonia ophioglossoides (L.) Ker Gawl., 1816 377
Arethusa ophioglossoides L., 1753 377
Snakemouth Orchid 377
Pogonia verticillata Nutt., 1818 ..... 371, 517
Arethusa medeoloides Pursh, 1814 ..... 317, 371, 517
Arethusa verticillata Muehl. ex Willd., 1805 371
Isotria medeoloides (Pursh) Raf., 1838 517
Small Whorled Pogonia 517
Pogonia, Small Whorled ..... (see *Pogonia verticillata*)
Poison Ivy ..... (see *Toxicodendron radicans*)
Poison Sumac ..... (see *Toxicodendron vernix*)
Poisontree, Florida ..... (see *Metopium toxiferum*)
Pokeweed, American ..... (see *Phytolacca americana*)
Polygala L., 1753 ..... 266, 268, 355, 385, 472, 478, 502, 622, 928
Polygala biflora 502
Polygala senega L., 1753 ..... 266, 268, 472, 478, 502, 928
Seneca Root 197, 461, 698
Seneca Snakeroot 268, 698
Polygala verticillata L., 1753 622
Whorled Milkwort 622
Polygonum L., 1753 ..... 355, 385, 569
Smartweed 355, 385
Polygonum virginianum L., 1753 385
Virginia Smartweed 385
Polymnia tetragonotheca L. ..... (see *Tetragonotheca helianthoides*)
Polypodium L., 1753 ..... 377, 428, 506
Polypodium polypodioides (L.) Watt, 1867 ..... (see *Pleopeltis polypodioides*)
Polypodium virginianum L., 1753 ..... 428, 506
Rock Polypody 428
Virginia Polypody Fern 428, 506
Polypodium vulgare L., 1753 506
Polypody, Rock ..... (see *Polypodium virginianum*)
Polytrichum perigonale Michx., 1803 [Moss] 429
Pontederia cordata L., 1753 267
Mockschaw 267
Pickerel Weed 267
Poplar, Balsam ..... (see *Populus balsamifera*)
Poplar, Tulip ..... (see *Liriodendron tulipifera*)
Poplar, Yellow ..... (see *Liriodendron tulipifera*)
Poppy, Opium ..... (see *Papaver somniferum*)
Populus L., 1753 ..... 266, 623, 901
Populus balsamifera L., 1753 623
Balsam Poplar 623
Populus deltoides Bartram ex Marshall, 1785 ..... 543, 901
Cotton Tree 902
Cottonwood 543, 902
Populus nigra L., 1753 ..... 676, 985
Lombardy Poplar 676, 985
Populus tremula L., 1753 266
European Aspen 266
Porella L., 1753 [Liverwort] 277, 571-72
Porella pinnata L., 1753 ..... 277, 572
Poria Pers., 1794 [Fungi] 183
Porteranthus stipulatus (Muhl. ex Willd.) Britton, 1894 578
Gillenia stipulata (Muhl. ex Willd.) in W. P. C. Barton, 1817 578
Spiraea stipulata Muhl. ex Willd., 1809 578
American Ipecac 578
Indian Physic 578
Porteranthus trifoliatus (L.) Britton, 1894 268-69
Gillenia trifoliata Moench, 1794 268-69
Spiraea trifoliata L., 1753 ..... 267, 269, 924
Bowman's Root 268
Indian Physic 196, 263, 269, 924
Potato, Irish ..... (see *Solanum tuberosum*)
Potato, Sweet ..... (see *Ipomoea batatas*)
Potentilla norvegica L., 1753 355
Norwegian Cinquefoil 355
Pothos foetidus Aiton ..... (see *Symplocarpus foetidus*)
Pothos putorii Bartram ..... (see *Symplocarpus foetidus*)
Prairie Gentian ..... (see *Eustoma grandiflorum*)
Prairie Rosinweed ..... (see *Silphium terebinthinaceum*)
Prairie Willow ..... (see *Salix humilis*)
Prenanthes L., 1753 ..... 271, 491, 574, 698
Rattlesnake Root 271, 491, 698
Prenanthes alba L., 1753 271
Prenanthes autumnalis Walter, 1788 271

Prenanthes serpentaria Pursh, 1814 [1813]..... 491, 698
Gall of the Earth..... 491
Rattlesnakeroot..... 698
Prenanthes suavis Salisb., 1805..... 271
Prenanthes virgata Michx., 1803..... 271
Prickly Ash.....(see *Zanthoxylum clava-herculis*)
Pride-of-India.....(see *Melia azedarach*)
Primulaceae.....(see *Samolus*)
Prinos verticillatus L., 1753.....(see *Ilex verticillata*)
Privet, Wild.....(see *Ligustrum vulgare*)
Proserpinaca L., 1753..... 520
Prunus caroliniana Aiton, 1769..... 488
Prunus maritima Marshall, 1785..... 383
Prunus pensylvanica L. f., 1781..... 582
Fire Cherry..... 582
Prunus serotina Ehrh., 1788..... 268
Black Cherry..... 440
Prunus virginiana L., 1753.....268, 582, 675, 929
Wild Cherry..... 268, 675
Puccoon, Red.....(see *Sanguinaria canadensis*)
Puccoon, Hoary.....(see *Lithospermum canescens*)
Purple False Oat.....(see *Trisetum melicoides*)
Purple Foxglove.....(see *Digitalis purpurea*)
Purple Fritillary.....(see *Fritillaria lanceolata*)
Purple Meadowparsnip..(see *Thaspium trifoliatum*)
Purple Passionflower.....(see *Passiflora incarnata*)
Purple-flowering Raspberry.....(see *Rubus odoratus*)
Purshia tridentata (Pursh) DC., 1818.....517, 1029
Antelope Bitterbrush.....517, 1029
Pycnanthemum flexuosum (Walter) Britton, Stern & Poggenb., 1888..... 517
Pycnanthemum incanum (L.) Michx., 1803..... 592
Pycnanthemum linifolium Pursh, 1813 [1814]... 517
Pyrola L., 1753.....845, 913
Pyrola maculata L., 1753.....(see *Chimaphila maculata*)
Pyrola umbellata L., 1753.....(see *Chimaphila umbellata*)
Pyrularia Michx., 1803.....501, 531
Pyrularia pubera Michx., 1803..... 531
Buffalonut.....501, 531
Elknut..... 531
Pyrus communis L., 1753..... 296
Pear..... 296

Q

Quaking Grass.....(see *Briza*)
Quassia L., 1762..... 176
Quassia amara L., 1762..... 176
Queen of the Meadow..... (see *Filipendula ulmaria*)
Quercus L., 1753.....69, 482, 580-81
Oak.....66, 69-71, 121, 131, 175, 183, 436-39, 442, 447, 458, 503, 642, 793
Quercus alba L., 1753..... 69
White Oak.....69, 70, 71, 121, 439
Quercus pumila Walter, 1788..... 581
Running Oak..... 581
Quercus virginiana Mill., 1768..... 793
Live Oak..... 793
Quinine.....(see *Cinchona officinalis*)

R

Ranunculus ficaria L., 1753..... 424
Fig Buttercup..... 424
Ranunculus repens L., 1753..... 424
Creeping Buttercup..... 424
Raspberry, Purple-flowering.....(see *Rubus odoratus*)
Rattlesnake Master.....(see *Eryngium yuccifolium*)
Rattlesnakeroot.....(see *Prenanthes serpentaria*)
Rattlesnakeroot, Slender.....(see *Prenanthes autumnalis*)
Rattlesnakeroot, Western.....(see *Prenanthes alba*)
Red Buckeye.....(see *Aesculus pavia*)
Red Maple.....(see *Acer rubrum*)
Red Puccoon.....(see *Sanguinaria canadensis*)
Red Squill.....(see *Urginea maritima*)
Red Trillium.....(see *Trillium erectum*)
Redbud.....(see *Cercis*)
Redwood, Dawn.....(see *Metasequoia*)
Reed, Giant.....(see *Arundo donax*)
Resurrection Fern..... (see *Pleopeltis polypodioides*)
Rhamnus caroliniana Walter, 1788.....(see *Frangula caroliniana*)
Rhapidophyllum hystrix (Pursh) H. Wendl & Drude ex Drude, 1876..... 486
Chamaerops hystrix Fraser ex Pursh, 1814..... 486-89
Needle Palm..... 486, 489
Rhexia virginica L., 1753..... 426, 582
Common Meadow Beauty..... 426
Rhinanthus virginianus L., 1753.....(see *Aureolaria virginica*)
Rhododendron calendulaceum (Michx.) Torr., 1824..... 502
Azalea calendulacea Michx., 1803..... 502
Flame Azalea..... 502
Rhododendron catawbiense Michx., 1803..... 498
Catawba Rosebay..... 498
Rhododendron maximum L., 1753..... 69, 1061
Great Laurel..... 69
Rosebay Rhododendron..... 69, 1061
Rhododendron minus Michx., 1803..... 1061
Piedmont Rhododendron..... 1061
Rhododendron punctatum Andrews, 1798..... 1061
Rhododendron, Piedmont.....(see *Rhododendron minus*)
Rhododendron, Rosebay.....(see *Rhododendron maximum*)
Rhus L., 1753.....179, 181-82, 194, 264, 269, 295, 355, 383, 482, 587-88, 892, 926
Sumac..... 179, 194, 197, 269, 295, 383, 440, 482, 588
Rhus aromatica Aiton, 1789..... 182
Fragrant Sumac..... 182
Rhus canadensis Marshall, 1785..... 355
Rhus elegans Aiton, 1789.....(see *Rhus glabra*)
Rhus glabra L., 1753..... 182, 269, 482
Rhus elegans Aiton, 1789..... 482
Smooth Sumac..... 482
Rhus hirta (L.) Sudworth, 1892..... 295
Rhus typhina L., 1756..... 295
Staghorn Sumac..... 295
Rhus michauxii Sarg., 1895..... 482
Rhus pumila Michx., 1803..... 482
False Poison Sumac..... 482
Rhus pumila Michx., 1803..... (see *Rhus michauxii*)
Rhus radicans L., 1753.....(see *Toxicodendron radicans*)
Rhus typhina L., 1756.....(see *Rhus hirta*)
Rhus vernix L., 1753.....(see *Toxicodendron vernix*)

Ribes L., 1753....111, 517, 525, 580
Currant....525
Ribes aureum Pursh, 1814....517
Golden Currant....517
Ribes nigrum L., 1753....581
Grosullaria nigra (L.) Rupr., 1860....581
European Black Currant....581
Rice, Cultivated....(see *Oryza sativa*)
Rice Grass....(see *Oryzopsis*)
Rice, Wild....(see *Zizania aquatica*)
Richweed....(see *Collinsonia canadensis*)
Richweed....(see *Collinsia canadensis*)
Ricinus communis L., 1753....455
Castor Bean....455, 708
Robin, Wake....(see *Trillium grandiflorum*)
Robinia pseudoacacia L., 1753....677, 901
Black Locust....677, 901
Robinia viscosa Vent., 1800....427, 503
Clammy Locust....427
Rock Polypody....(see *Polypodium virginianum*)
Rock Rose....(see *Cistus*)
Rockcress, Lyrate....(see *Arabis lyrata*)
Root, China....(see *Smilax china*)
Root, Culver's....(see *Veronicastrum virginicum*)
Root, Pleurisy....(see *Asclepias tuberosa*)
Root, Worm....(see *Galega virginica*)
Rosaceae, African....(see *Cliffortia trifoliata*)
Rose Mallow....(see *Kosteletzkya virginica*)
Rose, Rock....(see *Cistus*)
Rosebay Rhododendron....(see *Rhododendron maximum*)
Rosebay, Catawba....(see *Rhododendron catawbiense*)
Rosemallow, Swamp....(see *Hibiscus grandiflorus*)
Rosepink....(see *Sabatia angularis*)
Rosewood, Indian....(see *Dalbergia*)
Rosinweed, Prairie....(see *Silphium terebinthinaceum*)
Rough Buttonweed....(see *Dioda teres*)
Rough Horsetail....(see *Equisetum*)
Royal Palm....(see *Roystonia regia*)
Roystonea regia (Kunth) O. F. Cook, 1900....721
Royal Palm....721
Rubia tinctorum L., 1753....175, 440, 503
Madder....440, 797
Rubus dalibarda L., 1753....525
Rubus odoratus L., 1753....409
Purple-flowering Raspberry....409
Running Oak....(see *Quercus pumila*)
Rush, Flowering....(see *Butomus umbellatus*)
Rush, Scouring....(see *Equisetum*)
Rushfoil....(see *Crotonopsis*)
Russet Buffaloberry....(see *Shepherdia canadensis*)
Russian Thistle....(see *Salsola*)
Rusty Menziesia....(see *Menziesia ferruginea*)

S

Sabal Adans., 1763....170, 205, 489, 492
Sabal palmetto (Walter) Lodd. ex Schult., 1830....489, 492
Corypha palmetto Walter, 1788....489
Palmetto....489
Sabatia angularis (L.) Pursh, 1814....509
Rosepink....509
Saccharum L., 1753....746-47
Sugar Cane....746-47
Saddle Flower....(see *Sarracenia purpurea*)
Sage, Blood....(see *Salvia coccinea*)
Sagittaria L., 1753....xxiii, 428
Sagittaria acutifolia Pursh, 1866....(see *Sagittaria graminea*)
Sagittaria graminea Michx., 1803....xxiii
Sagittaria acutifolia Pursh, 1866....xxiii
Grassleaf Arrowhead....xxiii
Sagittaria sagittifolia L., 1753....428
Common Arrowhead....428
Salad, Shawnee....(see *Hydrophyllum virginianum*)
Salicornia L., 1753....531
Glasswort....531
Pickleweed....531
Salix L., 1753....202, 265-66, 582, 676
Willow....175-76, 310-11, 437, 525, 588, 614
Salix humilis Marshall, 1785....265
Salsify....(see *Tragopogon porrifolius*)
Salsola L., 1753....378, 379
Russian Thistle....379
Tumbleweed....379
Saltwort, Black....(see *Glaux maritima*)
Salvia coccinea P. J. Buchoz ex Etlinger, 1777....569
Blood Sage....569
Sambucus L., 1753....295, 414
Elderberry....295
Sambucus pubens Michx., 1803....414
Samolus L., 1753....486, 562
Water Pimpernel....562
Samolus valerandi L., 1753....562
Sanguinaria L., 1753....113, 184, 197, 354, 430, 567, 924
Sanguinaria canadensis L., 1753....113, 184, 197, 430, 924
Bloodroot....196-97
Red Puccoon....36, 197, 430
Saponaria L., 1753 [Caryophyllaceae]....625
Sarracenia L., 1753....408, 410, 424, 433, 483, 628, 909, 914
Pitcherplant....408, 410, 424
Sarracenia flava L., 1753....408, 483
Yellow Pitcherplant....408
Sarracenia psittacina Michx., 1803....483
Sarracenia purpurea L., 1753....408, 424, 483
Saddle Flower....424
Sarracenia variolaris Michx., 1803....483
Sarsaparilla, Bristly....(see *Aralia hispida*)
Sassafras J. Presl., 1825....131, 197, 438, 440, 443, 723, 921
Sassafras albidum (Nutt.) Nees, 1836....131, 438, 440
Laurus sassafras Nutt., 1818....131, 921
Satureja origanoides L., 1753....(see *Cunila origanoides*)
Saxifraga granulata L., 1753....424, 426
Meadow Saxifrage....424
White Saxifrage....424
Saxifraga nivalis L., 1753....569
Alpine Saxifrage....569
Saxifrage, Alpine....(see *Saxifraga nivalis*)
Saxifrage, Meadow....(see *Saxifraga granulata*)
Scaly Blazingstar....(see *Liatris squarrosa*)
Scaly Gayfeathers....(see *Liatris squarrosa*)
Scariola F. W. Schmidt....(see *Lactuca*)
Scarlet Beebalm....(see *Monarda didyma*)
Scarlet Morning Glory....(see *Ipomoea coccinea*)
Scentless Mock Orange....(see *Philadelphus inodorus*)
Schisandra Michx., 1803....486, 489
Stellaundria Brickell, 1803....486, 489

Schisandra glabra (Brickell) Rehd., 1944 489
Stellandria glabra Brickell, 1803 489
Bay Starvine 489
Schizaea pusilla Pursh, 1814 630
Schoenus L., 1753 575
Schreber Watershield ..... (see *Brasenia schreberi*)
Scilla maritima L., 1753 ..... (see *Urginea maritima*)
Sclerolepis uniflora (Walter) Britton, Stern & Poggenb., 1888 ..... 509, 1031
Ethulia uniflora Walter, 1788 ..... 509, 1031
Pine Barren Daisy 509, 1031
Sclerotium giganteum Rostr., 1889 [Fungi] 183
Scoparia L., 1753 292
Licoriceweed 292
Scoparia dulcis L., 1753 292
Scorzonera L., 1753 491
Vipergrass 491
Scotch Broom ..... (see *Cytisus scoparius*)
Scouring Rush ..... (see *Equisetum*)
Screwstem ..... (see *Bartonia tenella*)
Scrophularia marilandica L., 1753 ..... (see *Scrophularia nodosa* var. *marilandica*)
Scrophularia nodosa var. *marilandica* (L.) A. Gray, 1878 582
Scrophularia marilandica L., 1753 ..... 265, 582
Woodland Figwort 582
Sea Milkwort ..... (see *Glaux maritima*)
Seagrape ..... (see *Coccoloba uvifera*)
Seaside Brookweed ..... (see *Samolus valerandi*)
Sedge ..... (see *Cyperus*)
Sedum L. 502, 535, 536, 611
Sedum subg. *Telephium* (Gray) R. T. Clausen, 1975 502
Telephium L., 1753 502
Sedum telephioides Michx., 1803 ..... (see *Hylotelephium telephioides*)
Sedum ternatum Michx., 1803 535-36
Seedbox, Bushy ..... (see *Ludwigia alternifolia*)
Seneca Snakeroot ..... (see *Polygala senega*)
Senecio L., 1753 ..... 276, 407, 504
Senecio chrysanthemifolius Poir. 407, 504
Senecio chrysanthemum 407, 504
Senecio chrysanthemum ..... (see *Senecio chrysanthemifolius*)
Senna P. Mill., 1754 ..... 131, 426, 554
Senna marilandica (L.) Link, 1831 426
Cassia marilandica L., 1753 426
Maryland Senna 426
Senna obtusifolia (L.) Erwin & Barneby, 1982 605
Cassia obtusifolia L., 1753 605
Java Bean 605
Sicklepod 605
Senna, Maryland ..... (see *Senna marilandica*)
Serjania curassavica Radlk., 1875 505
Paullinia cartaginensis Jacq., 1768 505
Serpentaria virginiana ..... (see *Aristolochia serpentaria*)
Serratula praealta L., 1753 ..... (see *Vernonia*)
Serratula spicata L., 1753 ..... (see *Lacinaria spicata*)
Service Berry ..... (see *Amelanchier canadensis*)
Service Tree ..... (see *Amelanchier canadensis*)
Shawnee Salad ..... (see *Hydrophyllum virginianum*)
Sheep Kill ..... (see *Kalmia*)
Sheep Laurel ..... (see *Kalmia angustifolia*)
Shepherdia Nutt., 1818 ..... 502, 527, 540
Shepherdia canadensis (L.) Nutt., 1818 502
Hippophae canadensis L., 1753 502
Russet Buffaloberry 502
Shooting Star ..... (see *Dodecatheon*)
Short-awn Meadow-foxtail Grass ..... (see *Alopecurus aequalis*)
Shot, Indian ..... (see *Canna indica*)
Showy Partridge Pea ..... (see *Chamaecrista fasciculata*)
Sicklepod ..... (see *Senna obtusifolia*)
Sida hermaphrodita (L.) Rusby, 1894 427
Napaea hermaphrodita L., 1753 427
Virginia Fanpetals 427
Sida montana K. Schum., 1891 556
Sideroxylon L., 1753 ..... 607, 918
Silene L., 1753 ..... 527, 536, 625
Catchfly 527, 909
Silene stellata (L.) Aiton, 1811 426
Cucubalus stellatus L., 1753 426
Whorled Catchfly 426
Silene virginica L., 1753 ..... 604, 1057
Firepink 604, 1057
Silphium terebinthinaceum Jacq., 1770 427
Prairie Rosinweed 427
Silver Maple ..... (see *Acer saccharinum*)
Silverbell, Mountain ..... (see *Halesia tetraptera*)
Silverbell, Two-wing ..... (see *Halesia diptera*)
Silverbell Tree ..... (see *Halesia carolina*)
Simmondsia Nutt., 1844 ..... 521, 540
Simmondsia californica Nutt., 1844 521
Goatnut 521
Jojoba 521
Skunk Cabbage ..... (see *Symplocarpus foetidus*)
Skunk Cabbage, Narrow-spathed ..... (see *Symplocarpus angustispatha*)
Slender Blue Iris ..... (see *Iris prismatica*)
Slender Rattlesnakeroot ..... (see *Prenanthes autumnalis*)
Small Cranberry ..... (see *Vaccinium oxycoccos*)
Small Whorled Pogonia ..... (see *Pogonia verticillata*)
Smartweed ..... (see *Polygonum*)
Smartweed, Virginia ..... (see *Polygonum virginianum*)
Smilacina Desf., 1807 [Convallariaceae] 503
Smilax L., 1753 ..... 170, 392, 451, 521-22, 524, 578, 725
Smilax caduca L., 1753 392
Smilax caudca 392
China Root 392
Smilax caudca ..... (see *Smilax caduca*)
Smilax china L., 1753 170
China Root 170
Smilax rotundifolia L., 1753 392
Catbrier 392, 521
Smilax walteri Pursh, 1814 ..... 170, 392
Coral Greenbrier 170, 392
Smooth Sumac ..... (see *Rhus glabra*)
Smooth Yellow False Foxglove ..... (see *Aureolaria flava*)
Snakemouth Orchid ..... (see *Pogonia ophioglossoides*)
Snakeroot, Black ..... (see *Cimicifuga racemosa*)
Snakeroot, Seneca ..... (see *Polygala senega*)
Snakeroot, Virginia ..... (see *Aristolochia serpentaria*)
Sneezeweed ..... (see *Helenium autumnale*)
Snow Trillium ..... (see *Trillium grandiflorum*)
Snowbell, Bigleaf ..... (see *Styrax grandifolia*)
Solanum L., 1753 ..... 181, 509, 635, 678, 909
Nightshade 172, 181
Solanum heterandrum Pursh, 1814 509
Solanum rostratum Dunal, 1813 ..... 509, 678
Buffalobean 509, 678

Solanum tuberosum L., 1753 ..... 252, 362, 627, 836, 909
Batata virginiana 909
Irish Potato 131, 252, 264, 362, 612-13, 627, 676, 678, 758, 836, 901, 909
Solidago L., 1753 609
Goldenrod 450
Solidago maritima Rouy, 1771 503
Solidago mexicana L., 1753 503
Sonchus L., 1753 574
Sow Thistle 574
Sorghum bicolor (L.) Moench., 1794 465
Holcus bicolor L., 1771 465
Broomcorn 465
Grain Sorghum 465
Sorghum, Grain ..... (see *Sorghum bicolor*)
Sorrel, Wood ..... (see *Oxalis acetosella*)
Sow Thistle ..... (see *Sonchus*)
Soybean ..... (see *Glycine*)
Spanish Moss ..... (see *Tillandsia usneoides*)
Spartium scoparium L., 1753 (see *Cytisus scoparius*)
Speedwell ..... (see *Veronica*)
Spermacoce diodina Michx., 1803 ..... (see *Dioda teres*)
Spermacoce hyssopifolia 575
Sphagnum L., 1753 [Moss] 489, 505, 524
Sphagnum Moss ..... (see *Sphagnum*)
Spicewood ..... (see *Lindera benzoin*)
Spiderlily ..... (see *Hymenocallis*)
Spiderwisp ..... (see *Cleome gynandra*)
Spiderwort, Virginia ..... (see *Tradescantia virginiana*)
Spigelia marilandica L., 1753 ..... 268, 477, 503, 797, 933
Indian Pinkroot 197
Spiraea L., 1753 ..... 74, 268, 503, 577, 793, 924
Spiraea nova 502
Spiraea opulifolia L., 1753 ..... (see *Physocarpus opulifolia*)
Spiraea tomentosa L., 1753 793
Steeplebush 793
Spiraea trifoliata L., 1753 ..... (see *Porteranthus trifoliatus*)
Spiraea ulmaria L., 1753 ..... (see *Filipendula ulmaria*)
Spleenwort, Ebony ..... (see *Asplenium platyneuron*)
Spleenwort, Maidenhair ..... (see *Asplenium trichomanes*)
Spring Beauty ..... (see *Claytonia*)
Spring Draba ..... (see *Draba verna*)
Spurge ..... (see *Euphorbia*)
Squawroot, American ..... (see *Conopholis americana*)
Squill, Red ..... (see *Urginea maritima*)
Staghorn Sumac ..... (see *Rhus hirta*)
Stanleya Nutt., 1818 [Brassicaceae] 540
Staphylea L., 1753 410
Bladdernut 410
Star of Ohio ..... (see *Dodecatheon meadia*)
Star, Shooting ..... (see *Dodecatheon*)
Star-of-Bethlehem ..... (see *Ornithogalum umbellatum*)
Starvine, Bay ..... (see *Schisandra glabra*)
Steeplebush ..... (see *Spiraea tomentosa*)
Stellandria Brickell, 1803 ..... (see *Schisandra*)
Stellandria glabra Brickell ..... (see Schisandra glabra)
Stewartia ovata (Cav.) Weath., 1939 793
Mountain Camellia 793
Sticky Sarsaparilla ..... (see *Aralia hispida*)
Stock July Flower ..... (see *Mattiola incana*)
Stone Crop ..... (see *Hylotelephium telephioides*)
Stonecrop, Woodland ..... (see *Sedum ternatum*)
Strawberry, Appalachian Barren ..... (see *Waldsteinia fragarioides*)
Streptopus Michx., 1803 ..... 531, 901
Twistedstalk 531, 901
Strychnos ignatii Berg, 1778 172
Strychnos nix-vomica L., 1753 172
Stylosanthes elatior Sw., 1789 623
Stylosanthes hispida Michx., 1803 623
Styrax grandifolia Aiton, 1789 278
Bigleaf Snowbell 278
Sugar Cane ..... (see *Saccharum*)
Sugar Maple ..... (see *Acer saccharum*)
Sumac, False Poison ..... (see *Rhus michauxii*)
Sumac, Fragrant ..... (see *Rhus aromatica*)
Sumac, Poison ..... (see *Toxicodendron vernix*)
Sumac, Smooth ..... (see *Rhus glabra*)
Sumac, Staghorn ..... (see *Rhus hirta*)
Sundew, Threadleaf ..... (see *Drosera filiformis*)
Sunflower ..... (see *Helianthus annuus*)
Sunflower ..... (see *Helianthus*)
Sunflower, Woodland ..... (see *Helianthus divaricatus*)
Swallow-wort, White ..... (see *Cynanchum vincetoxicum*)
Swamp Pink ..... (see *Helonias bullata*)
Swamp Rosemallow ..... (see *Hibiscus grandiflorus*)
Sweet Acacia ..... (see *Acacia farnesiana*)
Sweet Fern ..... (see *Comptonia peregrina*)
Sweet Potato ..... (see *Ipomoea batatas*)
Sweetbay ..... (see *Magnolia virginiana*)
Sweetflag ..... (see *Acorus calamus*)
Sweetgale ..... (see *Myrica gale*)
Sweetgum ..... (see *Liquidambar styraciflua*)
Sweetleaf ..... (see *Symplocos tinctoria*)
Sweetroot ..... (see *Osmorhiza*)
Sweetshrub ..... (see *Calycanthus*)
Swertia L., 1753 ..... 488, 499
Felwort 499
Swollen Bladderwort ..... (see *Utricularia inflata*)
Sycamore ..... (see *Platanus*)
Syena Schreb., 1789 ..... (see *Mayaca*)
Symplocarpus angustispatha W. P. C. Barton 1050
Narrow-spathed Skunk Cabbage 1050
Symplocarpus foetidus (L.) Salisb. in W. P. C. Barton ex Nutt., 1817 ..... 528, 537, 604-05, 1050
Pothos foetidus Aiton, 1789 537
Pothos putorii Bartram, 1812 ..... 528, 605
Skunk Cabbage 528, 537, 605, 1050
Symplocos tinctoria (L.) L'Hér., 1791 524
Hopea tinctoria L., 1767 524
Horsesugar 524
Sweetleaf 524
Syringa vulgaris L., 1753 311
Lilac 311
Syzygium jambos (L.) Alston, 1931 505
Eugenia jambos L., 1753 505
Malabar Plum 505
Syzygium malaccense (L.) Merr. & L. M. Perry, 1938 505
Eugenia malaccensis L., 1753 505
Malaysian Apple 505

T

Talinum Adans., 1763 ..... 502, 554-55, 609-10, 634
Talinum teretifolium Pursh, 1814 ..... 554, 609

Tanacetum vulgare L., 1753 311
Common Tansey 311
Tansey, Common ..... (see *Tanacetum vulgare*)
Tar Flower ..... (see *Befaria racemosa*)
Taraxacum officinale Weber ex F. H. Wiggins, 1780 336
Leontodon taraxacum L., 1753 336
Dandelion 258, 336
Tawny Cottongrass ..... (see *Eriophorum virginicum*)
Taxodium distichum (L.) Rich., 1810 ..... 430, 524
Cupressus distichus L., 1753 ..... 430, 482, 524
Bald Cypress 430, 524
Tea ..... (see *Camellia sinensis*)
Tea, Marsh Labrador ..... (see *Ledum palustre*)
Tea, Mountain ..... (see *Gaultheria procumbens*)
Teak ..... (see *Tectona grandis*)
Teasel ..... (see *Dipsacus*)
Teasel, Cutleaf ..... (see *Dipsacus laciniatus*)
Tectona grandis L. f., 1781 [1782] 558
Teak 505, 557, 558
Telephium L., 1753 502
Tetragonotheca helianthoides L., 1753 502
Polymnia tetragonotheca L., 1767 502
Pineland Nerveray 502
Thalictrodes racemosa (L.) Kuntze, 1891 264
Actaea racemosa L., 1753 264
Cimicifuga racemosa (L.) Nutt., 1818 ..... 264, 268
Black Snakeroot 264, 268
Black Cohosh 264
Thalictrum dioicum L., 1753 581
Early Meadowrue 581
Thaspium trifoliatum (L.) A. Gray, 1856 592
Purple Meadowparsnip 592
Thistle, Globe ..... (see *Echinops sphaerocephalus*)
Thistle, Russian ..... (see *Salsola*)
Thistle, Sow ..... (see *Sonchus*)
Thorn Apple ..... (see *Datura stramonium*)
Thoroughwort, Hyssopleaf ..... (see *Eupatorium hyssopifolium*)
Threadleaf Sundew ..... (see *Drosera filiformis*)
Threeleaf Goldthread ..... (see *Coptis trifoliata*)
Thuja occidentalis L., 1753 610
Arborvitae 610
Eastern White Cedar 610
Thyme ..... (see *Thymus*)
Thymus L., 1753 527
Thyme 67
Tickseed ..... (see *Coreopsis*)
Tidal Marsh Amaranth ..... (see *Amaranthus cannabinus*)
Tilia L., 1753 ..... 296, 437, 569, 581, 790, 933
Tilia americana L., 1753 ..... 437, 933
Tilia caroliniana Mill., 1768 569
Tilia pubescens Aiton, 1789 569
American Basswood 569
Tilia caroliniana Mill., 1768 ..... (see *Tilia americana*)
Tilia pubescens Aiton, 1789 ..... (see *Tilia americana*)
Tillandsia usneoides L., 1762 ..... 420, 482, 487, 793
Spanish Moss 420
Tobacco ..... (see *Nicotiana*)
Tobacco, Indian ..... (see *Nicotiana quadrivalis*)
Tofieldia pubens Willd., 1769 527
Narthecium pubens Michx., 1803 527
Asphodel 527
Toothache Tree, Ash-leaved ..... (see *Zanthoxylum clava-herculis*)
Touch-me-not, Western ..... (see *Impatiens noli-tangere*)
Toxicodendron Mill., 1754 ..... 179, 264, 383, 587-88
Toxicodendron radicans (L.) Kuntze, 1891 ..... 179, 264, 587
Rhus radicans L., 1753 ..... 264, 587-88, 892
Poison Ivy 179-80, 182, 264, 587-88
Toxicodendron vernix (L.) Kuntze, 1891 179
Rhus vernix L., 1753 ..... 194, 588
Poison Sumac 179, 182, 194, 588
Tradescantia rosea Vent., 1800 ..... (see *Callisia rosea*)
Tradescantia virginiana L., 1753 487
Tradescantia virginica 487
Virginia Spiderwort 487
Tragopogon porrifolius L., 1753 546
Salsify 546
Tragopogon virginianus L., 1753 ..... (see *Krigia amplexicaule*)
Tree of Heaven ..... (see *Ailanthus altissima*)
Tree, Akee ..... (see *Blighia sapida*)
Tree, Cotton ..... (see *Populus deltoides*)
Tree, Cucumber ..... (see *Magnolia acuminata*)
Tree, Franklin ..... (see *Franklinia*)
Tree, Kentucky Coffee ..... (see *Gymnocladus dioicus*)
Tree, Service ..... (see *Amelanchier canadensis*)
Tree, Silverbell ..... (see *Halesia carolina*)
Triglochin L., 1753 531
Arrowgrass 531
Trillium L., 1753 ..... 489, 525, 535-36, 569, 604, 759, 1058
Trillium cernuum L., 1753 ..... 489, 569
Whip-poor-will Flower 489
Trillium cernuum Barton ..... (see *Trillium erectum*)
Trillium erectum L., 1753 489
Trillium cernuum Barton, 1821 ..... 489, 569
Red Trillium 489
Trillium grandiflorum (Michx.) Salisb., 1805 ..... 604, 759, 1058
Trillium rhomboideum var. *grandiflorum* Michx., 1803 1058
Snow Trillium 759, 1058
Wake Robin 759, 1058
Trillium umbrosum caulophyllum 536
Trillium, Red ..... (see *Trillium erectum*)
Trillium, Snow ..... (see *Trillium grandiflorum*)
Triodia R. Br., 1810 ..... 521, 540
Windsoria Nutt., 1818 ..... 521, 540
Tripsacum cylindricum Michx., 1803 ..... (see *Mnesithea cylindrica*)
Trisetum melicoides (Michx.) Vasey ex Scribn., 1884 576
Aira melicoides Michx., 1803 576
Purple False Oats 576
Tropaeolum L., 1737 354
Nasturtium 354
Trumpet Creeper ..... (see *Campsis radicans*)
Tuberous Grasspink ..... (see *Calopogon tuberosus*)
Tulip Poplar ..... (see *Liriodendron tulipifera*)
Tulip, Wild ..... (see *Tulipa sylvestris*)
Tulipa celsiana J. Henning, 1823 396
Tulipa sylvestris L., 1753 396
Wild Tulip 396
Tumbleweed ..... (see *Salsola*)
Turnip, Indian ..... (see *Arisaema triphyllum*)
Turtlehead ..... (see *Chelone*)
Turtlehead, White ..... (see *Chelone glabra*)

Tussilago L., 1753 502
Coltsfoot 502
Twinflower, American.....(see *Linnaea borealis*)
Twinleaf ..... (see *Jeffersonia diphylla*)
Twistedstalk ..... (see *Streptopus*)
Two-wing Silverbell ..... (see *Halesia diptera*)

U

Ulmus americana L., 1753..... 270, 731, 741
American Elm 713, 731
Red Elm..... 270
Umbrella Magnolia..... (see *Magnolia tripetala*)
Unicorn Plant ..... (see *Martynia proboscidea*)
Upas-tree..... (see *Antiaris toxicaria*)
Uraria Desv., 1813 [Fabaceae]..... 556
Urginea maritima (L.) Baker, 1873 148
Scilla maritima L., 1753..... 148
Red Squill 148
Utricularia L., 1753 .....523, 526, 527, 628, 629
Bladderwort..... 523, 629
Utricularia ceratophylla Michx., 1803 .....
..... (see *Utricularia inflata*)
Utricularia cornuta Michx., 1803..... 523, 527
Horned Bladderwort 523, 527
Utricularia inflata Walter, 1788 ..... 523, 628
Utricularia ceratophylla Michx., 1803.....
..... 523, 628
Swollen Bladderwort..... 523
Utricularia integra LeConte, 1824 629
Utricularia longirostris LeConte ex Elliot, 1821 . 629
Utricularia purpurea Walter, 1788..... 629
Utricularia saccata LeConte, 1816..... 629
Eastern Purple Bladderwort 629
Utricularia saccata LeConte, 1816.....
.....(see *Utricularia purpurea*)
Utricularia setacea Michx., 1803.....
.....(see *Utricularia subulata*)
Utricularia striata LeConte ex Torr., 1819..... 629
Utricularia subulata L., 1753..... 523, 628
Utricularia setacea Michx., 1803 ..... 523, 628
Zigzag Bladderwort 523, 628
Utricularia violacea R. Br., 1810..... 523
Utricularia violacea Barton, 1812..... 523
Violet Bladderwort..... 523
Uvularia L., 1753 [Liliaceae]..... 582

V

Vaccinium L., 1753 .....424, 580, 582
Vaccinium delicatula 581
Vaccinium macrocarpon Aiton, 1789 424
Cranberry 424
Vaccinium oxycoccos L., 1753 581
Small Cranberry 581
Vallisneria L., 1753 .....522, 527, 615, 635, 723
Vallisneria americana Michx., 1803 ..... 522, 724
Vallisneria spiralis L., 1753.....522, 527, 724
American Eel-grass..... 522, 724
Vallisneria spiralis L., 1753 .....
.....(see *Vallisneria americana*)
Vasevine..... (see *Clematis viorna*)
Venous Angelica..... (see *Angelica venenosa*)
Venus Flytrap..... (see *Dionaea muscipula*)
Veratrum album L., 1753 428
False White Hellebore [European]..... 428
Veratrum luteum L., 1753.....
.....(see *Chamaelirium carolinianum*)
Verbascum blattaria L., 1753.....336
Verbascum lychnitis L., 1753 622
White Mullein 622
Verbascum thapsus L., 1753 336
Verbena L., 1753 .....569, 610
Vervain 569, 610
Verbena carolina L., 1759 610
Vernonia Schreb., 1791 265
Vernonia gigantea var. *praealta* (L.) Daniels, 1907....
.....265
Serratula praealta L., 1753 265
Vernonia praealta (L.) Michx., 1803.....265
Veronica L., 1753 ..... 408, 409, 425, 621
Speedwell 408, 409, 425, 621
Veronica anagallis-aquatica L., 1753 621
Brook Pimpernel.....621
Veronicastrum virginicum (L.) Farwell, 1921 792
Culver's Root 792
Vervain..... (see *Verbena*)
Viburnum L., 1753 ..... 482, 488, 525
Viburnum lantanoides Michx., 1803.....482
Hobblebush 482
Viburnum nudum L., 1753 488
Vicia faba L., 1753 425
Garden Bean.....425
Viola L., 1753..... 411, 510, 731, 868
Violet 411
Violet ..... (see *Viola*)
Violet Bladderwort.....(see *Utricularia violacea*)
Vipergrass, Cutleaf ..... (see *Scorzonera laciniata*)
Virginia Bunchflower ...(see *Melanthium virginicum*)
Virginia Buttonweed ..... (see *Diodia virginica*)
Virginia Dayflower ..... (see *Commelina virginica*)
Virginia Dwarf Dandelion.....(see *Krigia virginica*)
Virginia Fanpetals..... (see *Sida hermaphrodita*)
Virginia Polypody Fern .....
..... (see *Polypodium virginianum*)
Virginia Smartweed .....(see *Polygonum virginianum*)
Virginia Snakeroot ..... (see *Aristolochia serpentaria*)
Virginia Spiderwort ..... (see *Tradescantia virginiana*)
Virginian Goatsbeard .....(see *Krigia amplexicaule*)
Vitis L., 1753 ..... 385, 443, 461, 917
Grape.....111, 181, 264, 339, 385, 443, 450,
..... 453, 482, 611, 679, 821

W

Wake Robin.....(see *Trillium grandiflorum*)
Waldsteinia fragarioides (Michx.) Tratt., 1823....429
Dalibardia fragarioides Michx., 1803.....429
Appalachian Barren Strawberry.....429
Walking Fern .....(see *Camptosorus rhizophyllus*)
Walnut.....(see *Juglans*)
Walnut, Black ..... (see *Juglans nigra*)
Water Arum..... (see *Calla palustris*)
Water Pimpernel ..... (see *Samolus valerandi*)
Waterleaf, Blunt-leaf .....
.....(see *Hydrophyllum canadense*)
Waterlily, European White ..... (see *Nymphaea alba*)
Watermilfoil, Low.....(see *Myriophyllum humile*)
Watershield, Schreber .....(see *Brasenia schreberi*)
Wavy Hairgrass .....(see *Deschampsia flexuosa*)
Wax Myrtle .....(see *Morella cerifera*)
Waxweed, Blue.....(see *Cuphea viscosissima*)
Weed, Butterfly.....(see *Asclepias tuberosa*)

Weed, Flax.....(see *Linaria vulgaris*)
Western Rattlesnakeroot..... (see *Prenanthes alba*)
Western Touch-me-not. (see *Impatiens noli-tangere*)
Whip-poor-will Flower..... (see *Trillium cernuum*)
White Buckeye ..... (see *Aesculus parviflora*)
White Clintonia ..... (see *Clintonia umbellata*)
White Colicroot..... (see *Aletris farinosa*)
White Mullein ..... (see *Verbascum lychnitis*)
White Oak..... (see *Quercus alba*)
White Turtlehead..... (see *Chelone glabra*)
Whorled Catchfly ..... (see *Silene stellata*)
Whorled Milkwort..... (see *Polygala verticillata*)
Wild Cherry..... (see *Prunus virginiana*)
Wild Morning Glory ..... (see *Calystegia sepium*)
Wild Privet..... (see *Ligustrum vulgare*)
Wild Rice..... (see *Zizania aquatica*)
Wild Tulip ..... (see *Tulipa sylvestris*)
Willow..... (see *Salix*)
Willow, Prairie..... (see *Salix humilis*)
Windsoria Nutt., 1818..... (see *Triodia*)
Winterberry ..... (see *Ilex verticillata*)
Wintergreen..... (see *Gaultheria procumbens*)
Wisteria Nutt., 1818 540
Wisteria frutescens (L.) Poir., 1823..... 540
Glycine frutescens L., 1753..... 540
Witch Hazel..... (see *Hamamelis*)
Witchalder, Dwarf..... (see *Fothergilla gardeni*)
Wood Sorrel..... (see *Oxalis acetosella*)
Wood, Quassia ..... (see *Quassia amara*)
Woodland Figwort.....
..... (see *Scrophularia nodosa* var. *marilandica*)
Woodland Stonecrop..... (see *Sedum ternatum*)
Woodland Sunflower .... (see *Helianthus divaricatus*)
Woodrush..... (see *Cyperella campestris*)
Woods Geranium..... (see *Geranium maculatum*)
Worm Root ..... (see *Galega virginica*)
Woodhousia 160

X

Xanthorhiza Marshall, 1785..... 113, 175, 408
Xanthorhiza apiifolia L'Hér., 1788..... 408
Xanthorhiza simplicissima Marshall, 1785.. 113, 408
Yellowroot 408
Xyris L., 1753 505

Y

Yellow Anisetree..... (see *Illicium parviflorum*)
Yellow Buckeye..... (see *Aesculus flava*)
Yellow Fritillary ..... (see *Fritillaria pudica*)
Yellow Lady Slipper..... (see *Cypripedium acaule*)
Yellow Pitcherplant ..... (see *Sarracenia flava*)
Yellow Poplar ..... (see *Liriodendron tulipifera*)
Yellow Toad-flax ..... (see *Linaria vulgaris*)
Yellow Wide-lip Orchid..... (see *Liparis loeselii*)
Yellow Wild Indigo..... (see *Baptisia tinctoria*)
Yellow-eyed Grass ..... (see *Xyris*)
Yellow-fringed Orchid..... (see *Platanthera ciliaris*)
Yellowroot ..... (see *Xanthorhiza simplicissima*)

Z

Zanthorhiza apiifolia L'Hér., 1784..... 426
Yellowroot..... 426
Zanthoxylum clava-herculis L., 1753..... 265-66
Ash-leaved Toothache Tree..... 265
Prickly Ash 265-66
Zea mays L., 1753 ..... 609, 752
Corn..... 36, 49, 103, 185, 262, 283, 292, 440,
. 673-75, 679, 726, 755-56, 763, 806, 888, 909
Zephyranthes atamasco (L.) Herb., 1821.... 339, 424
Amaryllis atamasca L., 1753..... 339, 424
Atamasco Lily..... 424
Zigzag Bladderwort..... (see *Utricularia subulata*)
Zizania Gronov. ex L., 1742 ..... 576, 725
Zizania aquatica L., 1753 725
Wild Rice 725
Zizania fluitans..... (see *Luziola fluitans*)
Zizania miliacea Michx. .... (see *Zizaniopsis miliacea*)
Zizaniopsis miliacea (Michx.) Döll & Asch., 1871.....
..... 576
Zizania miliacea Michx., 1803..... 576
Giant Cutgrass 576
Zygadenus muscitoxicum Regel, 1883 488
Melanthium muscitoxicum Walter, 1788 ... 488
Flypoison..... 488

Index of Fauna

The following index consists of scientific names confirmed in modern usage, and their synonymous names are included if mentioned herein. This index is is not intended to be a comprehensive nomenclature, but rather a guide to names. Synonyms often reflect the original or older names as would have been used by Barton and his contemporaries. Since scientific names change as our understanding of these plant taxa does, it is useful to have their modern equivalents. Common names also are included in this index. The describing author and original date of publication are included for those scientific names that could be verified.

Key for Index:

Bold italic type	Valid scientific name in current use
Italic type	Synonymous or older valid scientific name
Roman type	Common name, other invalid or informal scientific name, as used by Barton or others in correspondence or unpublished manuscripts.

In the index that follows, for any given taxon, its modern scientific name is listed first, followed by any synonyms or associated names, and then by common names used in the text. The faunal index spans the animal kingdom from mammals to birds, both living and extinct, as well as amphibians, reptiles, fish, and insects. As the American continent opened to exploration from the eighteenth to the nineteenth centuries, the discoveries of novel and remarkable mammals and birds were of especial interest to Barton and other contemporary naturalists in both the New and Old Worlds.

Ed. Victoria C. Hollowell

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A

Aardvark....(see *Orycteropus afer*)
Accipiter nissus L. 1758....715
Sparrow Hawk....715
Acipenser L., 1758....74, 707
Sturgeon....71, 338, 345, 704, 705, 706, 707
Aerodramus Oberholser, 1906....719
Swift, Edible-nest....718, 719
African Elephant....(see *Loxodonta africana*)
Agama cornutum Harlan....(see *Phrynosoma cornutum*)
Agkistrodon P. Beauv., 1799....686
Copperhead [Snake]....686
Agkistrodon piscivorus Lacépède, 1789....686
Cottonmouth Moccasin [Snake]....686
Aix sponsa L., 1758....724
Anas sponsa L., 1758....724
Summer Duck....724
Wood Duck....724
Alcelphus buselaphus Pallas, 1766....1001
Hartebeast [African]....1001
Alces alces L., 1758....764-65
Moose....764-65
Alligator....(see *Alligator* and/or *Cryptobranchus*)
Alligator Gar....(see *Atractosteus spatula*)
Alligator mississipiensis Daudin, 1801....688, 692
Lacerta crocodylus L., 1758....692
American Alligator....309, 670, 688, 692, 693, 731, 895, 898
Alligator, American....(see *Alligator mississipiensis*)
Alopex lagopus L., 1758....771
Canis lagopus L., 1758....771
Arctic Fox....771
Ambystoma Tschudi, 1838....683, 684, 689, 894
Ambystoma lermaense Taylor, 1939 [1940]....689
Siredon lermaensis Smith & Taylor, 1948. 689
Axolotl....689
Water Dog....689
Ambystoma maculatum Shaw, 1802....683-84, 894
Lacerta maculata Shaw, 1802....683
Lacerta punctata L., 1766....683-84
Lacerta subviolacea Barton, 1804....683-84, 894
Salamandra maculata Green, 1818....683
Salamandra venenosa Daudin, 1803....683-84
Spotted Salamander....683-84
Water Dog....689
American Alligator....(see *Alligator mississipiensis*)
American Badger....(see *Taxidea taxus*)
American Bison....(see *Bison bison*)
American Black Bear....(see *Ursus americanus*)
American Coot....(see *Fulica americana*)
American Crocodile....(see *Crocodylus acutus*)
American Deer, Whitetailed....(see *Odocoileus virginianus*)
American Elk....(see *Cervus elaphus*)
American Flying Squirrel....(see *Glaucomys*)
American Goldfinch....(see *Carduelis tristis*)
American Jerboa....(see *Zapus hudsonius*)
American Kestrel....(see *Falco sparverius*)
American Mink....(see *Mustela vison*)
American Whitetailed Deer....(see *Odocoileus virginianus*)
American Wolverine....(see *Gulo gulo*)
American Woodcock....(see *Scolopax minor*)
Ampelis americana Wilson, 1808....(see *Bombycilla cedorum*)
Amphisbaena L, 1758....700
Worm Snake....700
Amphiuma Garden, 1821....683, 684, 685, 903
Amphiuma, Three-toed....(see *Amphiuma tridactylum*)
Amphiuma tridactylum Cuvier, 1827....683-84, 685, 903
Siren quadrupeda [Barton name]....903
Syren quadrapeda Custis, 1807..683, 685, 903
Three-toed Amphiuma....683-85
Congo Eel....683-85, 903
Anas acuta L., 1758....724
Camrass acuta [Barton name]....724
Northern Pintail Duck....724
Anas ferina L., 1758....(see *Aythya ferina*)
Anas sponsa L., 1758....(see *Aix sponsa*)
Anas valisineria Wilson, 1814....(see *Aythya valisineria*)
Anhinga Brisson, 1760....352, 713, 715, 722, 901
Plotus L., 1766....352, 713, 722
Anhinga anhinga L., 1766....352, 713, 722, 1048
Colymbus colubrinus....714, 722
Plotus anhinga L., 1766....352, 713, 722
Plotus loricatus Barton....722
Snake Bird....343, 713, 717, 722, 1048
Water-turkey....715
Ant....(see *Formica*)
Antacus bartonii Fabricius, 1798....(see *Cambarus bartonii*)
Anteater....(see *Myrmecophaga*)
Antilocapra americana Ord, 1815....304, 604
Pronghorn....304, 548, 604, 702
Antilope cervicapra L., 1758....304
Capra cervicapra L., 1758....304, 604
Black Buck....304
Stone Buck....304, 604
Apalone mutica Lesueur, 1827....75, 701
Trionyx muticus Lesueur, 1827....701
Smooth Softshell Turtle....75
Apalone spinifera Lesueur, 1827....75, 701
Trionyx spiniferus Lesueur, 1827....75, 701
Spiny Softshell Turtle....75
Apis mellifera L., 1758....582, 635, 679-80, 878
Honey Bee....635, 672, 679-80, 878-79
Apodemus agrarius Pallas, 1771....756
Mus agrarius Pallas, 1771....756
Striped Field Mouse....756
Aramus guarauna L., 1766....726, 913, 1024
Crying Bird....717, 726, 913, 1024
Ephouskyca....252, 726
Limpkin....xxv, 726, 913, 1024
Rallus giganteus Bonaparte....726
Scolopaceous Courlan....726
Tantalus ephouskyca Barton....252, 726, 826, 845, 913
Tantalus pictus Bartram....726
Archilochus Reichenbach, 1854....719
Hummingbird....634, 717, 719, 738-39, 740-42, 836, 893
Archilochus colubris L., 1758....719
Trochilus colubris L., 1758....719
Bird-Fly....634, 719
Ruby-throated Hummingbird....719
Arctic Fox....(see *Alopex lagopus*)
Arctic Hare....(see *Lepus arcticus*)

Arctomys Ord, 1815.....537, 542, 550, 761-62, 898
Arctomys citellus 537, 542, 762, 898
Arctomys ludovicianus Ord, 1815 .....
.....(see *Cynomys ludovicianus*)
Argali [Sheep] ..... (see *Ovis ammon*)
Arvicola terrestris L., 1758..... 669
Mus amphibius L., 1758..... 669
European Water Vole 669
Ascaris L., 1758..... 478
Asian Elephant .....(see *Elephas maximus*)
Asilus L., 1758..... 681
Robber Fly..... 681
Astroscopus Brevoort in Gill, 1860 [Electric fish] .....
..... 709
Stargazer 709
Atlantic Salmon .....(see *Salmo salar*)
Atractosteus spatula Lacépède, 1803..... 704, 793
Lepisosteus spatula Lacépède, 1803 .. 704, 793
Alligator Gar..... 704, 793
Axolotl .....(see *Ambystoma lermaense*)
Aythya americana Eyton, 1838 ..... 41, 590
Redhead Duck 41, 590
Aythya ferina L., 1758.....723, 1047
Anas ferina L., 1758.....41, 493, 590, 723
European Pochard Duck.....723, 1047
Aythya valisineria Wilson, 1814 .. 41, 590, 724, 1047
Anas valisineria Wilson, 1814..... 41, 724
Canvasback Duck.....41, 493, 590, 723, 1047

B

Badger, American.....(see *Taxidea taxus*)
Badger, Eurasian .....(see *Meles meles*)
Bald Eagle.....(see *Haliaeetus leucocephalus*)
Baldfaced Hornet.....(see *Dolichovespula maculata*)
Barbastella barbastellus Schreb., 1774 663
Vespertilio barbastellus Schreb., 1774..... 663
Western Barbastelle Bat..... 663
Barking squirrel .....(see *Cynomys ludovicianus*)
Barn Swallow .....(see *Hirundo rustica*)
Barred Owl .....(see *Strix varia*)
Bass, Red .....(see *Lutjanus coatesi*)
Bat, Big Brown .....(see *Eptesicus fuscus*)
Bat, Common Pipistrelle(see *Pipistrellus pipistrellus*)
Bat, Eastern Pipistrelle .....(see *Pipistrellus subflavus*)
Bat, Evening.....(see *Nycticeius humeralis*)
Bat, Greater Bulldog .....(see *Noctilio leporinus*)
Bat, Greater Horseshoe .....
..... (see *Rhinolophus ferrumequinum*)
Bat, Greater Spear-nosed.....
.....(see *Phyllostomus hastatus*)
Bat, Hairy Slit-faced.....(see *Nycteris hispida*)
Bat, Hoary ..... (see *Lasiurus cinereus*)
Bat, Large Flying Fox ..... (see *Pteropus vampyrus*)
Bat, Lesser False Vampire (see *Megaderma spasma*)
Bat, Little Brown .....(see *Myotis lucifugus*)
Bat, Painted .....(see *Kerivoula picta*)
Bat, Pallas' Tube-nosed Fruit.....
.....(see *Nyctimene cephalotes*)
Bat, Particolored..... (see *Vespertilio murinus*)
Bat, Red .....(see *Lasiurus borealis*)
Bat, Schreber's Yellow..... (see *Scotophilus nigrita*)
Bat, Seba's Short-tailed .... (see *Carollia perspicillata*)
Bat, Serotine ..... (see *Eptesicus serotinus*)
Bat, Spectral.....(see *Vampyrum spectrum*)
Bat, Western Barbastelle .....
..... (see *Barbastella barbastellus*)
Bear .....(see *Ursus*)
Bear, American Black.....(see *Ursus americanus*)
Bear, Grizzly.....(see *Ursus arctos*)
Bear, Polar.....(see *Ursus maritimus*)
Beaver.....(see *Castor canadensis*)
Bed bug ..... (see Cimicidae)
Bee, Honey ..... (see *Apis mellifera*)
Beetle, Blister .....(see *Lytta vesicatoria*)
Beetle, Chrysomelid..... (see *Crioceris*)
Beetle, Colorado Potato .....
.....(see *Leptinotarsa decemlineata*)
Beetle, Larder..... (see *Dermestes lardarius*)
Beetle, May.....(see *Coccinella*)
Beetle, Potato ..... (see *Epicauta vittata*)
Beetle, Scarab.....(see *Melolantha melolantha*)
Big Brown Bat..... (see *Eptesicus fuscus*)
Bighorn Sheep.....(see *Ovis canadensis*)
Bird of Paradise.....(see *Paradisaea apoda*)
Bird, Crying.....(see *Aramus guarauna*)
Bird-fly .....(see *Archilochus colubris*)
Bird, Rail .....(see Rallidae)
Bird, Snake.....(see *Anhinga anhinga*)
Bison, American .....(see *Bison bison*)
Bison bison L., 1758..... 295, 551, 833
Bos americanus J. F. Gmelin 833
Bos bison L., 1758.....551, 775
American Bison..... 295, 551, 775, 833
Buffalo.....260, 295, 531, 705, 717, 775, 833
Bittern.....(see *Ixobrychus*)
Black Buck .....(see *Antilope cervicapra*)
Black Grouse.....(see *Lyrurus tetrix*)
Black Racer .....(see *Coluber*)
Black Snake.....264-65, 268, 289, 295, 695, 699
Black Squirrel.....(see *Sciurus niger*)
Black Vulture .....(see *Coragyps atratus*)
Black-billed Magpie .....(see *Pica pica*)
Black-tailed Prairie Dog (see *Cynomys ludovicianus*)
Blissus leucopterus Say, 1832.....674
Chinch Bug.....674
Blister Beetle .....(see *Lytta vesicatoria*)
Blue Grouse .....(see *Dendragapus obscurus*)
Blue Jay..... (see *Cyanocitta cristata*)
Bluebird..... (see *Sialia sialia*)
Bobolink.....(see *Dolichonyx oryzivorus*)
Bombycilla cedorum Vieillot, 1808 716
Ampelis americana Wilson, 1808.....716
Cedar Bird 716
Cedar Waxwing 715, 716
Bombyx mori L., 1758 .....478, 676
Silk Worm 478, 675, 676
Bootherium bombifrons Harlan, 1825 [fossil] .....
..... 307, 774-75
Woodland Muskox 307, 774
Borer, Peach Tree ..... (see *Synanthedon exitiosa*)
Bos americanus J. F. Gmelin.....(see *Bison bison*)
Bos bison L., 1758 .....(see *Bison bison*)
Brazilian Horned Frog.....(see *Ceratophrys aurita*)
Broad-tailed Cat .....(see *Castor canadensis*)
Brown Creeper.....(see *Certhia americana*)
Brown-headed Nuthatch..... (see *Sitta pusilla*)
Bruchus pisi Fabricius.....675
Pea Fly.....675
Bubo virginianus J. F. Gmelin, 1788.....715
Strix virginiana J. F. Gmelin, 1788.....715
Great Horned Owl 715
Buck, Black .....(see *Antilope cervicapra*)
Buck, Stone .....(see *Antilope cervicapra*)

Buffalo ..... (see *Bison bison*)
Buntings, Snow ..... (see *Plectrophenax nivalis*)
Butterfly ..... (see *Papilio*)
Buzzard, Turkey ..... (see *Cathartes aura*)

C

Cambarus bartonii Fabricius, 1798 375
Antacus bartonii Fabricius, 1798 375
Crayfish 375
Cameleopardus ..... (see *Giraffa camelopardalis*)
Canrass acuta [Barton name] ..... (see *Anas acuta*)
Canadian Jerboa ..... (see *Zapus hudsonius*)
Cancer moluccarus ..... (see *Limulus polyphemus*)
Canebrake Rattlesnake ..... (see *Crotalus horridus*)
Canidae 771
Canis L., 1758 ..... 770, 771, 772
Canis familiaris L., 1758 ..... 770, 1002
Domestic Dog 770, 771, 772, 1002
Canis lagopus L., 1758 ..... (see *Alopex lagopus*)
Canis latrans Say, 1823 771
Coyote 771
Canis lupus L., 1758 772
Gray Wolf 772
Canis rufus Audubon & Bachman, 1851 772
Red Wolf 772
Canis vulpes L., 1758 ..... (see *Vulpes vulpes*)
Canker Worm ..... (see *Phalaena vernata*)
Canvasback Duck ..... (see *Aythya valisineria*)
Capra cervicapra L., 1758 . (see *Antilope cervicapra*)
Capra hircus L., 1758 134
Domestic Goat 134
Caprimulgus carolinensis J. F. Gmelin, 1789 670
Chuck-will's Widow 670
Nightjar 670
Caprimulgus vociferus Wilson, 1812 ..... 670, 714
Nightjar 670
Whip-poor-will 670, 714, 740
Caracara ..... (see *Ibyater americanus*)
Cardinal, Grosbeak ..... (see *Cardinalis cardinalis*)
Cardinal, Northern ..... (see *Cardinalis cardinalis*)
Cardinalis cardinalis L., 1758 ..... 74, 796, 818
Loxia cardinalis L., 1758 ..... 400, 796, 818
Grosbeak Cardinal 74
Northern Cardinal 74, 796, 818
Carduelis Brisson, 1760 . 332, 334-35, 347, 714, 727
Carduelis americana Edwards .. (see *Carduelis tristis*)
Carduelis carduelis L., 1758 335
Fringilla carduelis L., 1758 335
European Goldfinch 335
Carduelis flammea L., 1758 ..... 332, 334-35
Fringilla flammea L., 1758 ..... 332, 334-35
Carduelis minima 335
Common Redpoll 332, 334-35
Carduelis minima ..... (see *Carduelis flammea*)
Carduelis pinus Wilson, 1810 714
Fringilla pinus Wilson, 1810 714
Pine Siskin 714
Carduelis tristis L., 1758 ..... 335, 347, 727
Fringilla tristis L., 1758 ..... 335, 347, 727
Carduelis americana Edwards 335
American Goldfinch 335, 347, 727
Thistlebird 335
Caribou ..... (see *Rangifer tarandus*)
Carolina Cuckoo ..... (see *Coccyzus americanus*)
Carolina Parakeet [extinct] ..... (see *Conuropsis carolinensis*)
Carolina Wren ..... (see *Thryothorus ludovicianus*)
Carollia perspicillata L., 1758 663
Vespertilio perspicillatus L., 1758 663
Seba's Short-tailed Bat 663
Carpodacus purpureus J. F. Gmelin, 1789 335
Fringilla purpurea Wilson, 1808 714
Purple Finch 332, 335, 714
Castor canadensis Kuhl, 1820 ..... 74, 400, 454, 756
Beaver 74, 400, 454, 661, 756, 852
Broad-tailed Cat 756
Cat, Domestic ..... (see *Felis catus*)
Cat, Sabertooth ..... (see *Smilodon*)
Catfish, Electric ..... (see *Malapterurus electricus*)
Catfish [Eurasian] ..... (see *Silurus*)
Catfish, Flathead ..... (see *Pylodictis olivaris*)
Cathartes aura L., 1758 721
Vultur aura L., 1758 721
Turkey Vulture 721
Cedar Bird ..... (see *Bombycilla cedorum*)
Cedar Waxwing ..... (see *Bombycilla cedorum*)
Ceratophrys aurita Raddi, 1823 1044
Brazilian Horned Frog 1044
Certhia L., 1758 [bird] 476, 714-16, 727, 882
Certhia americana Bonaparte, 1838 ..... 715-16, 727, 883
Certhia fusca J. F. Gmelin, 1788 ..... 716, 822
Certhia rufa Bartram 715-16, 882
Brown Creeper 715-16, 882
Certhia familiaris L., 1758 ..... 714-16, 727, 882-83
Eurasian Creeper 715-16, 727
Certhia floridana 714
Yellow-throated Wren 714
Certhia fusca J. F. Gmelin, 1788 ..... (see *Certhia americana*)
Certhia rufa Bartram ..... (see *Certhia americana*)
Cervalces scotti Lydekker, 1898 307
Stag-moose [fossil] 307
Cervus L., 1758 ..... 311, 341, 346, 580, 764, 765, 766, 833, 897, 899
Cervus cameleopardis L., 1758 ..... (see *Giraffa cameleopardis*)
Cervus canadensis Erxleben, 1777 ..... (see *Cervus elaphus*)
Cervus elaphus L., 1758 ..... 311, 341, 346, 580, 764-66
Cervus canadensis Erxleben, 1777 765
Cervus wapiti Barton, 1806 ..... 765, 897, 899
Elk, American 311, 341, 346, 348-49, 351, 580, 760, 764-66, 896-97, 899
Wapiti 765-66, 896-97, 899
Cervus virginianus Boddaert ..... (see *Odocoileus virginianus*)
Cervus wapiti Barton, 1806 ..... (see *Cervus elaphus*)
Chaetura pelagica L., 1758 738
Hirundo pelasgia L., 1766 738
Chimney Swift 521, 737-38, 741
Chafer, Rose ..... (see *Macrodactylus subspinosus*)
Charadrius melodus Ord, 1824 586
Piping Plover 586
Charadrius vociferus L., 1758 719
Kildee 719-20
Kildeer 719-20
Charadrius wilsonia Ord, 1814 586
Wilson's Plover 586
Chimney Swift ..... (see *Chaetura pelagica*)
Chimpanzee ..... (see *Pan troglodytes*)

Chinaman fish.....(see *Symphorus nematophorus*)
Chinch Bug.....(see *Blissus leucopterus*)
Chipmunk, Eastern.....(see *Tamias striatus*)
Chipmunk, Siberian.....(see *Tamias sibericus*)
Chrysomelid Beetle.....(see *Crioceris*)
Chub, Creek.....(see *Semotilus atromaculatus*)
Cicada, Periodic.....(see *Magicicada septendecini*)
Cicada, Seventeen Year.....(see *Magicicada septendecim*)
Cimex L., 1758.....676
Cimicidae.....676
Bed Bug.....676
Cistothorus palustris Wilson, 1810.....714
Marsh Wren.....714
Passer palustris Bartram.....714
Reed Sparrow.....714
Citellus Oken, 1816.....(see *Spermophilus*)
Clark's Crow.....(see *Nucifraga columbiana*)
Clark's Nutcracker.....(see *Nucifraga columbiana*)
Clemmys insculpta LeConte, 1830.....(see *Glyptemys insculpta*)
Clupea L., 1758.....xxvi, 703
Clupea harlonia Clinton, 1822.....xxvi, 703
Herring.....xxvi, 703
Coati, White-nosed.....(see *Nasua narica*)
Coccinella L., 1758.....676
May Beetle.....676
Coccyzus americanus L., 1758.....732
Cuculus carolinensis Wilson, 1811.....732
Carolina Cuckoo.....732
Yellow-billed Cuckoo.....732
Codling Moth.....(see *Galleria mellonella*)
Colaptes auratus L., 1758.....607, 721, 723
Picus auratus L., 1766.....723
Golden-winged Woodpecker.....721
Northern Flicker.....607, 721, 723
Collared Peccary.....(see *Pecari tajacu*)
Colorado Potato Beetle.....(see *Leptinotarsa decemlineata*)
Coluber L., 1758 [snake].....683, 697
Columba migratoria L., 1758.....(see *Ectopistes migratoria*)
Colymbus colubrinus.....(see *Anhinga anhinga*)
Colymbus migratorius L., 1766.....(see *Phalacrocorax auritus*)
Common Opossum.....(see *Didelphis marsupialis*)
Common Pipistrelle Bat.....(see *Pipistrellus pipistrellus*)
Common Redpoll.....(see *Carduelis flammea*)
Common Vole, European.....(see *Microtus arvalis*)
Condylura cristata L., 1758.....669, 763
Sorex cristatus L., 1758.....763
Star-nosed Mole.....669, 763
Congo Eel.....(see *Amphiuma tridactylum*)
Contopus cooperi Nutt., 1831.....714
Olive-sided Flycatcher.....714
Contopus virens L., 1766.....714
Muscicapa rapax Wilson, 1832.....714
Eastern Wood-Pewee.....714
Conuropsis carolinensis L., 1758.....439, 717-18
Carolina Parakeet [extinct].....36, 439, 717-18
Coot, American.....(see *Fulica americana*)
Copperhead [snake].....(see *Agkistrodon*)
Coragyps atratus Bechstein, 1793.....721
Vultur atratus Wilson, 1814.....721
Black Vulture.....721
Cormorant, Double-crested.....(see *Phalacrocorax auritus*)
Corvus pica L., 1758.....(see *Pica hudsonia*)
Cottonmouth Moccasin [snake].....(see *Agkistrodon piscivorus*)
Cottontail, Eastern.....(see *Sylvilagus floridanus*)
Courlan, Scolopaceous.....(see *Aramus guarauna*)
Coyote.....(see *Canis latrans*)
Cowbird.....(see *Molothrus*)
Crab, Horseshoe.....(see *Limulus polyphemus*)
Crab, Molucca.....(see *Limulus polyphemus*)
Crane, Florida Sandhill.....(see *Grus canadensis*)
Crayfish.....(see *Cambarus bartonii*)
Creek Chub.....(see *Semotilus atromaculatus*)
Creeper, Brown.....(see *Certhia americana*)
Creeper, Eurasian.....(see *Certhia familiaris*)
Cricket.....(see *Gryllus*)
Crioceris Mueller, 1764.....676
Chrysomelid Beetle.....676
Crocodile.....(see *Crocodylus acutus*)
Crocodylus acutus Cuvier, 1807.....693
Lacerta crocodylus L., 1758.....692
Crocodile.....385, 683, 692, 693, 825
Crossbill, Red.....(see *Loxia curvirostra*)
Crotalus L., 1758.....76, 329, 332-33, 357, 386, 461, 550, 693-95, 697-99, 815, 878-79, 910-11, 943, 1068
Rattlesnake.....174, 188, 212, 216, 266, 282, 286, 291, 303, 311, 329, 357-58, 381-82, 384, 386, 478, 491, 634, 660, 671, 683, 686, 693-98, 743, 762, 768, 833-34, 959, 1034-35, 1068
Crotalus adamanteus P. Beauv., 1799.....911, 1034
Crotalus rhombifer Latreille, 1801.....911
Crotalus rhombiferus Brickell, 1805.....911
Eastern Diamondback Rattlesnake.....686, 911, 1034
Crotalus horridus L., 1758.....76, 333, 693-94, 695, 697, 878-79, 911, 943, 959, 1034
Canebrake Rattlesnake.....686
Timber Rattlesnake.....693, 911, 1034
Crotalus niger.....357
Crotalus rhombifer Latreille, 1801.....(see *Crotalus adamanteus*)
Crotalus rhombiferus Brickell, 1805.....(see *Crotalus adamanteus*)
Crow, Clark's.....(see *Nucifraga columbiana*)
Crying Bird.....(see *Aramus guarauna*)
Cryptobranchus Leukart, 1821.....75, 622, 683, 686, 909
Alligator.....686-88, 691, 908, 944
Cryptobranchus alleganiensis Daudin, 1803.....75, 622, 683, 686, 909, 999, 1042-43
Protonopsis horrida Barton, 1824.....686
Salamandra alleganiensis Daudin, 1803.....683, 686
Salamandra gigantea Barton, 1808.....683, 686, 689
Salamandra horrida Barton, 1808.....622, 683, 686-89
Salamandra maxima Barton, 1808.....622, 683, 687-89
Hellbender.....75, 671, 683-84, 686-87, 691, 834, 903, 999, 1042-43
Tweeg.....687, 1043
Cuckoo, Carolina.....(see *Coccyzus americanus*)
Cuckoo, Yellow-billed.....(see *Coccyzus americanus*)

Cuculus carolinensis Wilson, 1811 ..... (see *Coccyzus americanus*)
Curculio L., 1758 675
Weevil 675
Cyanocitta cristata L., 1758 722
Blue Jay 722
Cynomys Raf., 1817 ..... 537, 761-62
Prairie Dog 537, 761-62
Cynomys ludovicianus Ord, 1815 ..... 762, 898
Arctomys ludovicianus Ord, 1815 ..... 537, 761-62, 898
Cynomys socialis Raf., 1817 762
Monax missouriensis Warden, 1819 762
Barking squirrel 762
Black-tailed Prairie Dog 537
Louisiana Marmotte 762, 898
Monax missouriensis 762
Prairie Dog 761-62
Prairie Squirrel 761
Prairou 536-37
Wishtonwish 761

D

Dalripa, Swedish ..... (see *Lagopus lagopus*)
Deer ..... (see *Odocoileus*)
Deer, American White-tailed ..... (see *Odocoileus virginianus*)
Deer, Mule ..... (see *Odocoileus hemionus*)
Dendragus obscurus Say, 1823 310
Blue Grouse 310
Dendroica coronata L., 1766 716
Myrtle Warbler 715-16
Parus uropygeoflavo 716
Yellow-rumped Warbler 716
Dermestes lardarius L., 1758 753
Larder Beetle 753
Didelphis L., 1758 ..... 400, 748, 833
Opossum ..... xxv, 309, 327, 361, 373, 384, 387-88, 392, 400, 438, *555*, *559*, 629, 660-61, 664, 670, 734, 743-51, 758, 768, 818, 833-34, 865, 897-98, 908, 910, 913, 942-43, 991
Didelphis dorsigera L., 1758 744
Didelphis marsupialis L., 1758 743
Common Opossum 660-61
Didelphis virginiana Kerr, 1792 ..... 743, 768, 991
Didelphis woapink Barton, 1806 ..... 748, 897
Virginia Opossum 697, 751
Woapink 748, 897
Didelphis woapink Barton, 1806 ..... (see *Didelphis virginiana*)
Dipodomys ordii Woodhouse, 1853 753
Dipus longipes 753, 754
Mus longipes 753, 754
Ord's Kangaroo Rat 753
Dipus Zimmermann, 1780 ..... xiii, xxiii, 281, 286, 296, 371, 463, *585*, *586*, *587*, *588*, *590*, 660, 664, 671, *752*, *753*, *754*, *755*, 883, 890, *905*
Three-toed Jerboa 286
Dipus americanus Barton, 1799 ..... (see *Zapus hudsonius*)
Dipus hudsonius Zimmermann, 1780 ..... (see *Zapus hudsonius*)
Dipus longipes ..... (see *Dipodomys, Onychomys*)
Dipus mellivorus [Barton name] ..... (see *Zapus hudsonius*)
Dog, Domestic ..... (see *Canis familiaris*)
Dog, Prairie ..... (see *Cynomys ludovicianus*)
Dolichonyx oryzivorus L., 1758 ..... 628, 718, 725
Emberiza oryzivora L., 1766 ..... 628, 718, 725-26
Bobolink 718, 725
Reed-bird 628, 718, 725
Rice-bird 628, 725
Dolichovespula maculata L., 1763 ..... 312, 1037
Vespa maculata L., 1763 ..... 312, 1037
Baldfaced Hornet 1037
White-faced Hornet 312
Domestic Cat ..... (see *Felis catus*)
Domestic Dog ..... (see *Canis familiaris*)
Domestic Goat ..... (see *Capra hircus*)
Domestic Pig ..... (see *Sus scrofa*)
Dragonfly ..... (see *Libellula*)
Dryocopus pileatus L., 1758 723
Picus pileatus L., 1758 723
Pileated Woodpecker 723
Duck, Canvasback ..... (see *Aythya valisineria*)
Duck, European Pochard ..... (see *Aythya ferina*)
Duck, Northern Pintail ..... (see *Anas acuta*)
Duck, Redhead ..... (see *Aythya americana*)
Duck, Summer ..... (see *Aix sponsa*)
Dugong ..... (see *Dugong dugon*)
Dugong Lacépède, 1799 1038
Dugong dugon Mueller, 1776 1038
Trichechus dugon Mueller, 1776 1038
Dugong 1038

E

Eagle, Bald ..... (see *Haliaeetus leucocephalus*)
Eagle, Sea ..... (see *Haliaeetus leucocephalus*)
Eastern Chipmunk ..... (see *Tamias striatus*)
Eastern Cottontail ..... (see *Sylvilagus floridanus*)
Eastern Diamondback Rattlesnake ..... (see *Crotalus adamanteus*)
Eastern Fox Squirrel ..... (see *Sciurus niger*)
Eastern Kingbird ..... (see *Tyrannus tyrannus*)
Eastern Mole ..... (see *Scalopus aquaticus*)
Eastern Phoebe ..... (see *Sayornis phoebe*)
Eastern Pipistrelle Bat ..... (see *Pipistrellus subflavus*)
Eastern Wood-peewee ..... (see *Contopus virens*)
Eastern Woodrat ..... (see *Neotoma floridana*)
Ectopistes migratoria L., 1766 [extinct] 277, 326
Columba migratoria L., 1766 ..... 277, 716
Passenger Pigeon ..... xxiv, 326, 715, 716, 724
Edible-nest Swift ..... (see *Aerodramus*)
Eel, Congo ..... (see *Amphiuma tridactylum*)
Eel, Electric ..... (see *Electrophorus electricus*)
Eel Crow ..... (see *Phalacrocorax auritus*)
Elator [insect] 902
Elator major fuscus phosphoricus ..... (see *Lampyris noctiluca*)
Electric Catfish ..... (see *Malapterurus electricus*)
Electric Eel ..... (see *Electrophorus electricus*)
Electrophorus electricus L., 1766 709
Gymnotus electricus L., 1766 ..... 15, 709
Electric Eel 696, 709
Elephant 307, 345, 383, 388, 420, 479, 613, 659-60, 663-64, 772-74, 777, 815-16, 896-97, 901-02, 906, 911, 1036
Elephant, African ..... (see *Loxodonta africana*)
Elephant, Asian ..... (see *Elephas maximus*)

Elephas L., 1758 ..... 304, 477, 773, 777, 906, 911, 1036
Elephas africanus Blumenbach, 1797 ..... (see *Loxodonta africana*)
Elephas americanus Kerr, 1792 ..... (see *Mammut americanum*)
Elephas mastodontus Barton, 1810 .. (see *Mastodon*)
Elephas maximus L., 1758 777
Asian Elephant 777
Elephas primigenius Blumenbach, 1797 ..... (see *Mammuthus primogenius*)
Elephas primogenus Barton, 1810 ..... 304, 777, 906
Elk ..... (see *Cervus elaphus*)
Emberiza hyemalis L., 1766 ..... (see *Plectrophenax nivalis*)
Emberiza oryzivora L., 1766 ..... (see *Dolichonyx oryzivorus*)
Enhydra lutris L., 1758 761
Mustela lutris L., 1758 761
Sea Otter 761
Ephouskya ..... (see *Aramus guarauna*)
Epicauta Dejean, 1833 461
Epicauta vittata Fabricius, 1775 ..... 675, 678
Lytta vittata Fabricius, 1775 ..... 461, 675
Potato Beetle 675, 678
Eptesicus fuscus P. Beauv., 1796 ..... 751-52, 1046
Vespertilo fuscus P. Beauv., 1796 .... 752, 1046
Big Brown Bat 751-52, 1046
Eptesicus serotinus Schreb., 1774 663
Vespertilio serotinus Schreb., 1774 663
Serotine Bat 663
Erethizon Cuvier, 1823 ..... 295, 669, 751
Porcupine 55, 295, 669, 751
Erethizon dorsatum L., 1758 ..... 295, 669, 751
Hystrix dorsata L., 1758 669
North American Porcupine 295, 669
Esox osseus L., 1758 ..... (see *Lepisosteus osseus*)
Eudocimus ruber L., 1766 ..... 101, 768
Tantalus ruber L., 1766 101
Scarlet Ibis 101, 768
Eurasian Badger ..... (see *Meles meles*)
Eurasian Creeper ..... (see *Certhia familiaris*)
Eurasian Mole ..... (see *Talpa*)
Eurasian Social Vole ..... (see *Microtus oeconomus*)
Eurasian Woodcock ..... (see *Scolopax rusticola*)
European Brown Bear ..... (see *Ursus arctos*)
European Brown Trout ..... (see *Salmo trutta*)
European Cave Salamander ..... (see *Proteus*)
European Common Vole ..... (see *Microtus arvalis*)
European Goldfinch ..... (see *Carduelis carduelis*)
European Ground Squirrel ..... (see *Spermophilus citellus*)
European House Sparrow ... (see *Passer domesticus*)
European Mink ..... (see *Mustela lutreola*)
European Mountain Hare ..... (see *Lepus timidus*)
European Pochard Duck ..... (see *Aythya ferina*)
European Rabbit ..... (see *Oryctolagus cuniculus*)
European Water Vole ..... (see *Arvicola terrestris*)
European Wood Nuthatch ..... (see *Sitta europea*)
Evening Bat ..... (see *Nycticeius humeralis*)
Exocoetus volitans L., 1758 133
Two-winged Flying Fish 133

F

Falco L., 1758 ..... 400, 664, 716, 720, 731
Falco europogistus ..... (see *Falco sparverius*)
Falco glaucus ..... (see *Falco sparverius*)
Falco leucocephalus L., 1766 ..... (see *Haliaeetus leucocephalus*)
Falco ossifragus Brünnich, 1764 ..... (see *Haliaeetus leucocephalus*)
Falco sparverius L., 1758 716
American Kestrel 716
Falco europogistus Bosc 720
Falco glaucus Bartram 720
Felis catus L., 1758 ..... 665, 755
Domestic Cat 151, 197, 420, 584, 665, 724, 751, 755, 870
Finch, Cherokee word for ..... (see Onaclonerta)
Finch, Purple ..... (see *Carpodacus purpureus*)
Firefly, North American ..... (see *Photinus pyralis*)
Fish, Chinaman ..... (see *Symphorus nematophorus*)
Fish, Two-winged Flying ..... (see *Exocoetus volitans*)
Fishing Hawk ..... (see *Pandion haliaetus*)
Flat-headed Peccary ..... (see *Platygonus compressus*)
Flathead Catfish ..... (see *Pylodictis olivaris*)
Flicker, Northern ..... (see *Colaptes auratus*)
Florida Sandhill Crane ..... (see *Grus canadensis*)
Fly, Gray Potato ..... (see *Lytta cinerea*)
Fly, Hessian ..... (see *Mayetiola destructor*)
Fly, Horse Bot ..... (see *Gasterophilus intestinalis*)
Fly, Pea ..... (see *Bruchus pisi*)
Fly, Robber ..... (see *Asilus*)
Fly, Spanish ..... (see *Lytta vesicatoria*)
Fly, Wheat ..... (see *Mayetiola destructor*)
Flycatcher, Olive-sided ..... (see *Contopus cooperi*)
Flying Squirrel ..... (see *Glaucomys*)
Formica L., 1758 681
Ant 681
Fox Squirrel ..... (see *Sciurus niger*)
Fox, Gray ..... (see *Urocyon cinereoargenteus*)
Fox, Red ..... (see *Vulpes vulpes*)
Fringilla L., 1758 [bird] 332-35, 347, 714, 718, 723, 727
Fringilla canabina 335
Fringilla carduelis L., 1758 . (see *Carduelis carduelis*)
Fringilla domestica L., 1758 (see *Passer domesticus*)
Fringilla exilis 714
Fringilla flammea L., 1758 .. (see *Carduelis flammea*)
Fringilla hyemalis L., 1766 ..... (see *Plectrophenax nivalis*)
Fringilla pinus Wilson, 1810 ... (see *Carduelis pinus*)
Fringilla purpurea Wilson, 1808 ..... (see *Carpodacus purpureus*)
Fringilla rubra L., 1758 ..... (see *Piranga rubra*)
Frog, Brazilian Horned ..... (see *Ceratophrys aurita*)
Fulica americana J. F. Gmelin, 1789 347
American Coot 347

G

Galleria mellonella L., 1758 669
Phalaena tinea L., 1758 ..... 669, 680
Greater Wax Moth 669, 680
Wax Worm 669
Gar, Alligator ..... (see *Lepisosteus spatula*)
Gar, Longnose ..... (see *Lepisosteus osseus*)
Gar, Spotted ..... (see *Lepisosteus oculatus*)
Gasterophilus intestinalis De Geer, 1776 676
Oestrus equi Clark, 1797 676
Horse Bot Fly 676

Gazella dorcas L., 1758 669
Gazelle 669
Scalope 669
Gazelle ..... (see *Gazella dorcas*)
Geomys Raf., 1817 ..... 490, 550, 757-60
Pocket gopher 490, 756-60, 901, 1039
Geomys bursarius Shaw, 1800 ..... 550, 757-60
Plains Pocket Gopher 550, 757, 760
Mus bursarius Barton 758
Geomys pinetis Raf., 1817 ..... 490, 757-60, 901
Geomys tuza Merriam, 1895 760
Mus tuza Barton, 1806 ..... 490, 757-58, 760, 901
Salamander, Georgia 757-58, 901
Southeastern Pocket Gopher 490, 757, 759
Tuza 387, 660, 664
Geomys tuza Merriam, 1895 ..... (see *Geomys pinetis*)
Georgia Salamander ..... (see *Geomys pinetis*)
Giant Ground Sloth ..... (see *Megalonyx*)
Giraffa Brisson, 1762 664
Giraffa camelopardalis L., 1758 664
Cervus camelopardalis L., 1758 664
Camelopardus 664
Giraffe 664
Giraffe ..... (see *Giraffa camelopardalis*)
Glaucomys Thomas, 1908 295
American Flying Squirrel 295
Flying Squirrel 74, 295
Glaucomys volans L., 1758 295
Southern Flying Squirrel 295
Glow Worm ..... (see *Lampyris noctiluca*)
Glyptemys insculpta LeConte, 1830 ..... 700, 1048
Clemmys insculpta LeConte, 1830 ..... 700, 1048
Testudo insculpta LeConte, 1830 700
Testudo caelata Barton 1048
Wood Turtle 700, 1048
Goat, Domestic ..... (see *Capra hircus*)
Goat, Mountain ..... (see *Oreamnos americanus*)
Golden-crowned Kinglet ..... (see *Regulus satrapa*)
Goldfinch, American ..... (see *Carduelis tristis*)
Goldfinch, European ..... (see *Carduelis carduelis*)
Gopher, Michoacan Pocket ..... (see *Zygogeomys trichopus*)
Gopher, Northern Pocket ..... (see *Thomomys talpoides*)
Gopher, Plains Pocket ..... (see *Geomys bursarius*)
Gopher, Pocket ..... (see *Geomys*)
Gopher, Southeastern Pocket ..... (see *Geomys pinetis*)
Grasshopper Mouse, Northern ..... (see *Onychomys leucogaster*)
Gray Fox ..... (see *Urocyon cinereoargenteus*)
Gray Potato Fly ..... (see *Lytta cinerea*)
Gray Wolf ..... (see *Canis lupus*)
Great Horned Owl ..... (see *Bubo virginianus*)
Greater Bulldog Bat ..... (see *Noctilio leporinus*)
Greater Horseshoe Bat ..... (see *Rhinolophus ferrumequinum*)
Greater Siren ..... (see *Siren lacertina*)
Greater Spear-nosed Bat ..... (see *Phyllostomus hastatus*)
Grizzly Bear ..... (see *Ursus arctos*)
Grosbeak Cardinal ..... (see *Cardinalis cardinalis*)
Ground Sloth ..... (see *Megatherium*)
Ground Squirrel ..... (see *Spermophilus*)
Ground Squirrel, European ..... (see *Spermophilus citellus*)
Ground Squirrel, Thirteen-lined ..... (see *Spermophilus tridecemlineatus*)
Groundhog ..... (see *Marmota monax*)
Grouse, Black ..... (see *Lyrurus tetrix*)
Grouse, Blue ..... (see *Dendragapus obscurus*)
Grus canadensis L., 1758 ..... 726, 761
Grus canadensis pratensis 726
Florida Sandhill Crane 726, 761
Gryllus L., 1758 ..... 676, 681
Cricket 681
Guinea Fowl, Helmeted ..... (see *Numida meleagris*)
Gulo gulo L., 1758 669
Ursus luscus L., 1758 669
American Wolverine 669
Gymnotid Electric Fish ..... (see *Hypopomus artedi*)
Gymnotus electricus L., 1766 ..... (see *Electrophorus electricus*)

H

Hairy Slit-faced Bat ..... (see *Nycteris hispida*)
Haliaeetus leucocephalus L., 1766 ..... 664, 731
Falco leucocephalus L., 1766 731
Falco ossifragus Brünnich, 1764 731
Bald Eagle 71, 76, 655, 664, 723, 731, 934
Sea Eagle 731
Hare, Arctic ..... (see *Lepus arcticus*)
Hare, European Mountain ..... (see *Lepus timidus*)
Hare, Snowshoe ..... (see *Lepus americanus*)
Hares ..... (see Leporidae)
Hawk, Fishing ..... (see *Pandion haliaetus*)
Hawk, Sparrow ..... (see *Accipiter nisus*)
Hellbender ..... (see *Cryptobranchus alleganiensis*)
Helmeted Guinea Fowl ..... (see *Numida meleagris*)
Herring ..... (see *Clupea bartonia*)
Hessian Fly ..... (see *Mayetiola destructor*)
Hirundo horreorum Bartram ..... (see *Hirundo rustica*)
Hirundo pelasgia L., 1766 ..... (see *Chaetura pelagica*)
Hirundo purpurea L. ..... (see *Progne subis*)
Hirundo rustica L., 1758 ..... 729, 739
Hirundo horreorum Bartram 729
Barn Swallow 729, 739
Hoary Bat ..... (see *Lasiurus cinereus*)
Honey Bee ..... (see *Apis mellifera*)
Horned Frog, Brazilian ..... (see *Ceratophrys aurita*)
Horned lizard ..... (see *Phrynosoma cornutum*)
Hornet, Baldfaced ..... (see *Dolichovespula maculata*)
Hornet, White-faced ..... (see *Dolichovespula maculata*)
Horse Bot Fly ..... (see *Gasterophilus intestinalis*)
Horseshoe Crab ..... (see *Limulus polyphemus*)
House Sparrow, European ..... (see *Passer domesticus*)
House Wren ..... (see *Troglodytes aedon*)
Hummingbird ..... (see *Archilochus*)
Hummingbird, Ruby-throated ..... (see *Archilochus colubris*)
Hypopomus artedi Kaup, 1856 709
Gymnotid Electric Fish 709
Hystrix dorsata L., 1758 ..... (see *Erethizon dorsatum*)

I

Ibis, Scarlet ..... (see *Eudocimus ruber*)
Ibycter americanus Boddaert, 1783 721
Caracara 721
Ixobrychus exilis J. F. Gmelin, 1789 714
Ardea parva Bartram 714
Least Bittern 714

J

Jay, Blue ..... (see *Cyanocitta cristata*)
Jefferson's Mammoth.. (see *Mammuthus jeffersonii*)
Jerboa, American ..... (see *Zapus hudsonius*)
Jerboa, Canadian ..... (see *Zapus hudsonius*)
Jerboa, Three-toed ..... (see *Dipus*)

K

Kangaroo ..... (see *Macropus*)
Kangaroo Rat, Ord's ..... (see *Dipodomys ordii*)
Kerivoula picta Pallas, 1767 663
Vespertilio pictus Pallas, 1767 663
Painted Bat 663
Kestrel, American ..... (see *Falco sparverius*)
Kildee ..... (see *Charadrius vociferus*)
Kildeer ..... (see *Charadrius vociferus*)
King Vulture ..... (see *Sarcoramphus papa*)
Kingbird ..... (see *Tyrannus*)
Kingbird, Eastern ..... (see *Tyrannus tyrannus*)
Kinglet, Golden-crowned ..... (see *Regulus satrapa*)
Kinglet, Ruby-crowned ..... (see *Regulus calendula*)

L

Labrus L., 1758 708
Wrass [Fish] 708
Lacerta L., 1758 ..... 75, 543, ... 683, 684, 687, 692, 702, 703, 894, 901 ...(see also *Alligator, Ambystoma, Crocodylus, ... Cryptobranchus, Phrynosoma*)
Lacerta [Lizard] 75, 543, 683, 684, 687, 692, 702, 901
Lacerta crocodylus L., 1758 ....(see *Alligator mississipiensis, ... Crocodylus acutus* Cuvier, 1807)
Lacerta maculata Shaw, 1802 ....(see *Ambystoma maculatum*)
Lacerta orbicularis L., 1758 543
Lacerta punctata L., 1766 ....(see *Ambystoma maculatum*)
Lacerta subviolacea Barton, 1804 ....(see *Ambystoma maculatum*)
Lacerta tapajaxin Barton, 1806 ....(see *Phrynosoma cornutum*)
Lagopus lagopus L., 1758 310
Swedish Dalripa 310
Lagurus lagurus Pallas, 1773 756
Mus lagurus Pallas, 1773 756
Steppe Lemming 756
Lampyris L., 1758 ..... 676, 681
Lampyris noctiluca L., 1767 681
Elator major fuscus phosphoricus 677
Glow Worm [European] 681
Lanius excubitor L., 1758 725
Northern Shrike 724-25
Lanius tyrannus L., 1758 ..... (see *Tyrannus tyrannus*)
Larder Beetle ..... (see *Dermestes lardarius*)
Large Flying Fox Bat ..... (see *Pteropus vampyrus*)
Lasiurus borealis Müller, 1776 ..... 664, 752
Vespertilio noveboracensis 664
Vespertilio rubellus P. Beauv., 1796 752
Red Bat 664, 752
Lasiurus cinereus P. Beauv., 1796 751
Vespertilio pruinosus Plummer, 1844 751
Hoary Bat 751
Least Bittern ..... (see *Ixobrychus exilis*)
Lemming, Norway ..... (see *Lemmus lemmus*)
Lemming, Steppe ..... (see *Lagurus lagurus*)
Lemmus Link, 1795 756
Lemmus lemmus L., 1758 756
Mus lemmus L., 1758 756
Norway Lemming 756
Lepisosteus oculatus Winchell, 1864 704
Spotted Gar 704
Lepisosteus osseus L., 1758 ..... 703, 704
Esox osseus L., 1758 703
Longnose Gar 703, 704
Lepisosteus spatula Lacèpéde, 1803 ....(see *Atractosteus spatula*)
Leporidae 665
Hares 665
Leptinotarsa decemlineata Jay, 1824 678
Colorado Potato Beetle 678
Lepus americanus Erxleben, 1777 669
Snowshoe Hare 669, 768
Lepus arcticus Ross, 1819 669
Arctic Hare 669
Lepus cuniculus L., 1758 ....(see *Oryctolagus cuniculus*)
Lepus timidus L., 1758 898
Lepus variabilis Pallas, 1778 898
European Mountain Hare 898
Lepus variabilis Pallas, 1778 ..... (see *Lepus timidus*)
Lesser False Vampire Bat. (see *Megaderma spasma*)
Lewis's Woodpecker ..... (see *Melanerpes lewis*)
Libellula L., 1758 681
Dragonfly 681
Limpkin ..... (see *Aramus guarauna*)
Limulus polyphemus L., 1758 523
Cancer moluccarus 523
Horseshoe Crab 523
Molucca Crab 523
Lion, Mountain ..... (see *Puma concolor*)
Little Brown Bat ..... (see *Myotis lucifugus*)
Lizard, Horned ..... (see *Phrynosoma cornutum*)
Locust [Acrididae, insects] 76, 613, 674, 676, 893, 903
Long-tailed Weasel ..... (see *Mustela frenata*)
Longnose Gar ..... (see *Lepisosteus osseus*)
Lontra canadensis Schreb., 1777 536
Northern River Otter 536
Louisiana Marmotte .... (see *Cynomys ludovicianus*)
Loxia cardinalis L., 1758 ..... (see *Cardinalis cardinalis*)
Loxia curvirostra L., 1758 ..... 332, 730
Red Crossbill 332, 730
Loxodonta Cuvier, 1825 777
Loxodonta africana Blumenbach, 1797 777
Elephas africanus Blumenbach, 1797 777
African Elephant 777
Lutjanus coatesi Whitley, 1934 706
Red Bass 706
Lyrurus tetrix L., 1758 310
Black Grouse 310
Lytta cinerea Fabricius, 1775 ..... 675, 678
Gray Potato Fly 675
Lytta vesicatoria L., 1758 678-79
Blister Beetle 678-79
Spanish Fly 678-79
Lytta vittata Fabricius, 1775 ..... (see *Epicauta vittata*)

M

Macrodactylus subspinosus Fabricius, 1775 679
Rose Chafer 679
Macropus Shaw, 1790 750
Kangaroo 749, 750
Magicicada septendecim L., 1758 ..... 676, 678
Cicada septendecim L., 1758 678
Periodic Cicada 676, 678
Seventeen Year Cicada 678
Magpie ..... (see *Pica hudsonia*)
Magpie, Black-billed ..... (see *Pica pica*)
Malapterurus electricus J. F. Gmelin 709
Catfish, Electric 709
Mammoth .. xi, 6, 281, 304, 313, 345, 347, 383, 388, ... 393-94, 478, 531, 620, 774-77, 896, 898, ... 906, 911, 963, 1036
Mammoth, Jefferson's .. (see *Mammuthus jeffersonii*)
Mammoth, Siberian .. (see *Mammuthus primigenius*)
Mammoth, Woolly ..... (see *Mammuthus*)
Mammut Blumenbach, 1799 [fossil] 307
Mammut americanum Kerr, 1792 ..... 122, 304, 388, 477, 772-73
Elephas americanus Kerr, 1792 ..... 477, 1036
Mammut ohioticum Blumenbach, 1799 122
Mastodon giganteum Cuvier, 1806 ..... 122, 304
Mammut ohioticum Blumenbach, 1799 ..... (see *Mammut americanum*)
Mammuthus Brooks, 1828 [fossil] 304, 307, 388, 393-94, 774, 816, 898
Wooly Mammoth 393, 774
Mammuthus jeffersonii Osborn, 1922 ..... 304, 388
Jefferson's Mammoth 304, 388
Mammuthus primigenius Blumenbach, 1799 ..... 304, 393-94
Elephas primogenius Blumenbach, 1799 .. 304
Siberian Mammoth 304, 383, 393, 394
Manatee ..... (see *Trichechus manatus*)
Manis L., 1758 663
Pangolin 663
Marmota Blumenbach, 1779 ..... 295, 588
Marmota monax L., 1758 ..... 295, 588
Groundhog 295, 770
Woodchuck 295, 588, 770
Marmotte, Louisana ..... (see *Cynomis ludovicianus*)
Marsh Wren ..... (see *Cistothorus palustris*)
Marten, Pine ..... (see *Martes martes*)
Martes martes L., 1758 584
Mustela martes L., 1758 584
Pine Marten 584
Martes pennanti Erxleben, 1777 548
Mustela pennanti Erxleben, 1777 548
Fisher 548
Martin, Purple ..... (see *Progne subis*)
Masonia 759
Mastodon Raf., 1814 [fossil] ..... 122, 304, 312, 388, ... 393, 394, 477, 772-77, 816, 898, 1008, 1036
Mastodon americanum Kerr, 1792 ..... 304, 816, 898, 1036
Elaphas mastodonus Barton, 1810 ..... 304, 394, 773, 777, 906
Mastodon giganteum Cuvier, 1806 304
May Beetle ..... (see *Coccinella*)
Mayetiola destructor Say, 1817 ..... 609, 672, 673
Hessian Fly ..... xxii, 118, 214, 596, 598, 609, 672-73
Wheat Fly 214, 676
Meadow Jumping Mouse ..... (see *Zapus hudsonius*)
Megaderma spasma L., 1758 663
Vespertilio spasma L., 1758 663
Lesser False Vampire Bat 663
Megalonyx Wistar, 1799 [fossil] 304, 307, 769, 773-74
Sloth, Giant Ground 304, 769
Megalonyx jeffersonii Demarest, 1822 ..... 304, 307, 773
Megatherium Cuvier, 1796 [fossil] 257, 304, 307, 748, 769, 773-74, 777
Ground Sloth 304, 307, 769, 773
Melanerpes erythrocephalus L., 1758 716
Picus erythrocephalus L., 1758 716
Red-headed Woodpecker 277, 715-16
Melanerpes lewis G. R. Gray, 1849 ..... 548, 735
Lewis's Woodpecker 548, 735
Meleagris americanus Bartram ..... (see *Meleagris gallopavo*)
Meleagris gallopavo L., 1758 720-21
Meleagris americanus Bartram 720-21
Meleagris gallopavo americanus 720-21
Meleagris occidentalis 720-21
Meleagris palawa 720-21
Turkey 717, 720-21, 897
Meleagris gallopavo americanus ..... (see *Meleagris gallopavo*)
Meleagris occidentalis ..... (see *Meleagris gallopavo*)
Meleagris palawa ..... (see *Meleagris gallopavo*)
Meles meles L., 1758 ..... 588, 751, 769-70
Ursus meles L., 1758 ..... 586, 588
Eurasian Badger 588, 751, 770
Melolantha melolantha L., 1758 676
Scarab Beetle 676
Rose Chafer 676
Melolanthus Geoffrey, 1762 676
Mephitis E. Geoffroy St.-Hil. & G. Cuvier, 1795 769
Striped Skunk 769
Mephitis mephitis Schreb., 1776 769
Striped Pole Cat 769
Striped Skunk 769
Striped Weasel 769
Meriones americanus Barton .. (see *Zapus hudsonius*)
Mexican Tusa ..... (see *Zygogeomys trichopus*)
Mexican Tuza [Tusa, *sic*] ..... (see *Zygogeomys trichopus*)
Michoacan Pocket Gopher ..... (see *Zygogeomys trichopus*)
Microtus arvalis Pallas, 1778 901
Mus arvalis Pallas, 1778 901
European Common Vole 901
Microtus oeconomus Pallas, 1776 756
Mus oeconomus Barton 756
Tundra Vole 756
Microtus socialis Pallas, 1773 756
Mus socialis Pallas, 1773 756
Eurasian social vole 756
Mimus polyglottus L., 1758 400
Turdus polyglottus L., 1758 400
Northern Mockingbird 400
Miniscule Shrew ..... (see *Sorex minutissimus*)
Mink ..... (see *Mustela*)
Mink, American ..... (see *Mustela vison*)
Mink, European ..... (see *Mustela lutreola*)
Mockingbird, Northern ..... (see *Mimus polyglottus*)
Mole, Eastern ..... (see *Scalopus aquaticus*)

Mole, Star-nosed ..... (see *Condylura cristata*)
Moles, Eurasian ..... (see *Talpa*)
Molothrus Swainson, 1832 332
Cowbird 332
Molucca Crab ..... (see *Limulus polyphemus*)
Moose ..... (see *Alces alces*)
Monax missouriensis Warden, 1819 ..... (see *Cynomys ludovicianus*)
Motacilla L., 1758 722
Motacilla carolinensis 714
Mountain Goat ..... (see *Oreamnos americanus*)
Mountain Lion ..... (see *Puma concolor*)
Mouse, Meadow Jumping ..... (see *Zapus hudsonius*)
Mouse, Striped Field ..... (see *Apodemus agrarius*)
Mud Puppy ..... (see *Necturus maculosus*)
Mule Deer ..... (see *Odocoileus hemionus*)
Muraena siren J. F. Gmelin, 1789 ..... (see *Siren lacertina*)
Mus L., 1758 ..... 550, 757, 901
Mus agrarius Pallas, 1771 ... (see *Apodemus agrarius*)
Mus arvalis Pallas, 1778 ..... (see *Microtus arvalis*)
Mus amphibius L., 1758 ..... (see *Arvicola terrestris*)
Mus bursarius Barton ..... (see *Geomys bursarius*)
Mus citellus L., 1766 ..... (see *Spermophilus*)
Mus lagurus Pallas, 1773 ..... (see *Lagurus lagurus*)
Mus lemmus L., 1758 ..... (see *Lemmus lemmus*)
Mus oeconomus Barton .. (see *Microtus oeconomus*)
Mus socialis Pallas, 1773 ..... (see *Microtus socialis*)
Mus tuza Barton, 1806 ..... (see *Geomys pinetis*)
Muscicapa nigricans ..... (see *Sayornis nigricans*)
Muscicapa nunciola ..... (see *Sayornis phoebe*)
Muscicapa subflava Bartram 714
Muskox, Woodland .. (see *Bootherium bombifrons*)
Muskrat ..... (see *Ondatra zibethicus*)
Mustela L., 1758 ..... 65, 295, 536, 548, 584-85, 668, 761, 898, 1048
Mink 295, 309
Weasel 65, 668, 745, 769, 1020-21, 1047-48
Mustela erminea L., 1758 898
Stoat 898
Mustela frenata Lichenstein, 1831 ..... 65, 668, 1021
Long-tailed Weasel 65, 668, 1021
Mustela lutreola L., 1761 585
European Mink 585
Mustela lutris L., 1758 ..... (see *Enhydra lutris*)
Mustela vison Schreb., 1777 295
Mustela winingus Barton 585
American Mink 295
Myotis lucifugus LeConte, 1831 1046
Little Brown Bat 1046
Myrmecophaga L., 1758 663
Anteater 663
Myrtle Warbler ..... (see *Dendroica coronata*)

N

Nashua narica L., 1766 242
Viverra narica L., 1766 242
Viverra nasua 242
White-nosed Coati 242
Necturus maculata ..... (see *Necturus maculosus*)
Necturus maculosus Raf., 1819 683
Proteus tetradactylus Green, 1818 683
Siren maculosa Raf., 1818 683
Necturus maculata 683
Mud Puppy 683
Water Dog 683
Neotoma floridana Ord, 1818 757
Eastern Woodrat 757
Nightjar ..... (see *Caprimulgus*)
Noctilio leporinus L., 1758 663
Vespertilio leporinus L., 1758 663
Greater Bulldog Bat 663
North American Firefly ..... (see *Photinus pyralis*)
North American Porcupine (see *Erethizon dorsatum*)
Northern Cardinal ..... (see *Cardinalis cardinalis*)
Northern Flicker ..... (see *Colaptes auratus*)
Northern Grasshopper Mouse ..... (see *Onychomys leucogaster*)
Northern Mockingbird ..... (see *Mimus polyglottus*)
Northern Pintail Duck ..... (see *Anas acuta*)
Northern Pocket Gopher (see *Thomomys talpoides*)
Northern Raccoon ..... (see *Procyon lotor*)
Northern River Otter ..... (see *Lontra canadensis*)
Northern Shrike ..... (see *Lanius excubitor*)
Norway Lemming ..... (see *Lemmus lemmus*)
Norway Rat ..... (see *Rattus norvegicus*)
Nucifraga columbiana Wilson, 1811 ..... 548, 735
Clark's Crow 548, 735
Clark's Nutcracker 548, 735
Numida meleagris L., 1758 720
Helmeted Guinea Fowl 720
Nutcracker, Clark's ..... (see *Nucifraga columbiana*)
Nuthatch ..... (see *Sitta*)
Nuthatch, Brown-headed ..... (see *Sitta pusilla*)
Nuthatch, European Wood ..... (see *Sitta europea*)
Nuthatch, Red-breasted ..... (see *Sitta canadensis*)
Nuthatch, White-breasted ..... (see *Sitta carolinensis*)
Nycteris hispida Schreb., 1775 663
Bat, Hairy Slit-faced 663
Nycticeius humeralis Raf., 1818 1046
Evening Bat 1046
Nyctimene cephalotes Pallas, 1767 663
Vespertilio cephalotes Pallas, 1767 663
Pallas' Tube-nosed Fruit Bat 663

O

Odobenus rosmarus L., 1758 1038
Walrus 1038
Odocoileus Raf., 1832 ..... 295, 326
Deer 295, 326
Odocoileus hemionus Raf., 1817 295
Mule Deer 295
Odocoileus virginianus Zimmermann, 1780 ..... 295, 326, 833
Cervus virginianus Boddaert 833
White-tailed Deer, American 295, 326, 833
Oestrus equi Clark, 1797 ..... (see *Gasterophilus intestinalis*)
Olive-sided Flycatcher ..... (see *Contopus cooperi*)
Olm ..... (see *Proteus*)
Onaclonerta [Cherokee word for finch] 333-35, 347
Ondatra zibethicus L., 1766 669
Muskrat 669
Onychomys leucogaster Wied-Neuwied, 1841 ... 753
Dipus longipes 753-54
Mus longipes 753-54
Northern Grasshopper Mouse 753
Opossum, Common ..... (see *Didelphis marsupialis*)
Opossum, Virginia ..... (see *Didelphis virginiana*)
Ord's Kangaroo Rat ..... (see *Dipodomys ordii*)

Oreamnos americanus de Blainville, 1816.....764
Mountain Goat.....536, 764
Orycteropus afer Pallas, 1766.....663
Aardvark.....663
Oryctolagus cuniculus L., 1758.....894
Lepus cuniculus L., 1758.....894
European Rabbit.....894
Osprey.....(see *Pandion haliaetus*)
Otter, Northern River.....(see *Lontra canadensis*)
Otter, Sea.....(see *Enhydra lutris*)
Ovis ammon L., 1758.....764-65
Argali [Sheep].....388, 537, 764-65, 832
Ovis auduboni Merriam, 1901.....
.....(see *Ovis canadensis*)
Ovis canadensis Shaw, 1804.....
.....295, 346, 536-37, 542, 763-65, 832
Ovis auduboni Merriam, 1901.....764
Bighorn Sheep.....
.....295, 346, 536-37, 613, 763, 765, 832, 895
Rocky Mountain Sheep.....536-37, 542, 763-65
Tahuglauk.....764
Tayè.....537, 764-65, 818, 896, 902
Owl, Barred.....(see *Strix varia*)
Owl, Great Horned.....(see *Bubo virginianus*)

P

Paddlefish.....(see *Polyodon spathula*)
Painted Bat.....(see *Kerivoula picta*)
Pakira.....(see *Pecari tajacu*)
Pallas' Tube-nosed Fruit Bat.....
.....(see *Nyctimene cephalotes*)
Pan troglodytes Blumenbach, 1775.....697, 743
Chimpanzee.....697, 743
Pandion haliaetus L., 1758.....43
Fishing Hawk.....43, 134
Osprey.....43, 723
Pangolin.....(see *Manis*)
Panther.....(see *Puma concolor*)
Papilio L., 1758.....681
Butterflies.....681
Paradisaea apoda L., 1758.....101
Bird of Paradise.....101
Parakeet, Carolina [extinct].....
.....(see *Conuropsis carolinensis*)
Particolored Bat.....(see *Vespertilio murinus*)
Parus uropygeollavo.....(see *Dendroica coronata*)
Passenger Pigeon [extinct].....
.....(see *Ectopistes migratoria*)
Passer domesticus L., 1758.....714
Fringilla domestica L., 1758.....714
House Sparrow, European.....714
Passer palustris Bartram.....(see *Cistithorus palustris*)
Peach Tree Borer.....(see *Sanninoides exitiosa*)
Pecari angulatus Cope.....(see *Pecari tajacu*)
Pecari tajacu L., 1758.....477, 766
Pecari angulatus Cope.....346
Sus tajacu L., 1758.....766-67
Tayassu tajacu angulatus Cope.....346
Collared Peccary.....346, 477, 766-67
Pakira.....766-67
Peccary.....(see *Pecari, Platygonus*)
Peccary, Collared.....(see *Pecari tajacu*)
Peccary, Flat-headed.....(see *Platygonus compressus*)
Perca nilotica L., 1758.....(see *Tilapia nilotica*)
Perch.....71, 74, 704-05, 727
Periodic Cicada.....(see *Magicicada septendecim*)
Phalacrocorax auritus Lesson, 1831.....714
Colymbus migratorius.....714
Eel Crow.....714
Double-crested Cormorant.....714
Phalaena tinea L., 1758.....(see *Galleria mellonella*)
Phalaena vernata Peck, 1795.....673
Canker Worm.....673
Phoebe, Eastern.....(see *Sayornis phoebe*)
Phoenix.....736, 781
Photinus pyralis L., 1767.....676, 681
North American Firefly.....676, 681
Phrynosoma cornutum Harlan, 1825.....
.....543, 683, 703, 768, 901, 1049
Agama cornutum Harlan, 1825.....703
Lacerta tapajaxin Barton, 1806.....
.....543, 683, 703, 901
Horned Lizard.....
.....543, 683, 702-03, 768, 901, 1049
Tapajaxin.....543
Phyllostomus hastatus Pallas, 1767.....663
Greater Spear-nosed Bat.....663
Pica hudsonia Sabine, 1823.....536, 542, 768
Corvus pica L., 1758.....542
Black-billed Magpie.....536-37, 542, 768, 770
Pica nuttalli Audubon, 1837.....536
Yellow-billed Magpie.....536
Pica pica L., 1758.....521, 542, 768
European Magpie.....521, 542, 768-70
Picus auratus L., 1766.....(see *Colaptes auratus*)
Picus erythrocephalus L., 1758.....
.....(see *Melanerpes erythrocephalus*)
Picus pileatus L., 1758.....(see *Dryocopus pileatus*)
Pig, Domestic.....(see *Sus scrofa*)
Pigeon, Passenger [extinct].....
.....(see *Ectopistes migratoria*)
Pileated Woodpecker.....(see *Dryocopus pileatus*)
Pimingus [Barton, Delaware Indian Name].....
.....585, 753, 761
Pine Marten.....(see *Martes martes*)
Piping Plover.....(see *Charadrius melodus*)
Pipistrellus pipistrellus Schreb., 1774.....663
Vespertilio pipistrellus Schreb., 1774.....663
Common Pipistrelle Bat.....663
Pipistrellus subflavus Cuvier, 1832.....1046
Eastern Pipistrelle Bat.....1046
Piranga ludoviciana Wilson, 1811.....548, 735
Western Tanager.....548, 735
Piranga olivacea J. F. Gmelin, 1789.....723
Scarlet Tanager.....723
Piranga rubra L., 1758.....723
Fringilla rubra L., 1758.....723
Merula marilandica.....723
Summer Redbird.....723
Summer Tanager.....723
Plains Pocket Gopher.....(see *Geomys bursarius*)
Platygonus compressus LeConte, 1848.....308, 774
Flat-headed Peccary [fossil].....307-08, 767, 774
Plectrophenax nivalis L., 1758.....332, 718
Emberiza hyemalis L., 1766.....332, 718
Fringilla hyemalis L., 1766.....718
Snow Bunting.....332, 718
Plotus L., 1766.....(see *Anhinga*)
Plotus anhinga L., 1766.....(see *Anhinga anhinga*)
Plotus loricatus Barton.....(see *Anhinga anhinga*)
Plover, Piping.....(see *Charadrius melodus*)
Plover, Wilson's.....(see *Charadrius wilsonia*)
Pochard Duck, European.....(see *Aythya ferina*)

Pocket Gopher ..... (see *Geomys*)
Pocket Gopher, Northern ..... (see *Thomomys talpoides*)
Pocket Gopher, Plains ..... (see *Geomys bursarius*)
Pocket Gopher, Southeastern.. (see *Geomys pinetis*)
Polar Bear ..... (see *Ursus maritimus*)
Polecat ..... (see *Mephitis*)
Polyodon spathula Walbaum, 1792 704
Paddlefish 704
Pons-pau-cloo-moose ..... (see *Progne subis*)
Porcupine ..... (see *Erethizon*)
Porcupine, North American ..... (see *Erethizon dorsatum*)
Porzana carolina L., 1758 718
Sora 718
Potato Beetle ..... (see *Epicauta vittata*)
Prairie Dog ..... (see *Cynomys*)
Prairie Dog, Black-tailed (see *Cynomys lucovicianus*)
Prairie Squirrel ..... (see *Cynomys lucovicianus*)
Prairou ..... (see *Cynomys lucovicianus*)
Procyon lotor L., 1758 ..... 295, 326, 746, 768
Ursus lotor L., 1758 768
Northern Raccoon 326, 746, 768
Progne subis L., 1758 ..... 715, 731, 738
Hirundo purpurea[o] 715, 737
Pons-pau-cloo-moose 715
Purple Martin 715, 731, 738
Pronghorn ..... (see *Antilocapra americana*)
Proteus Laurenti, 1768 ..... 363, 398, 690, 691, 792, 917, 1041
Proteus anguinus Laurenti, 1768 ..... 690, 691
European cave Salamander 690
Olm 690
Proteus tetradactylus Green, 1818 ..... (see *Necturus maculosus*)
Protonopsis horrida Barton, 1824 ..... (see *Cryptobranchus alleganiensis*)
Ptarmigan, Willow ..... (see *Tetrao urogallus*)
Pteropus vampyrus L., 1758 663
Vespertilio vampyrus L., 1758 663
Large Flying Fox Bat 663
Puma ..... (see *Puma concolor*)
Puma concolor L., 1771 ..... 295, 346
Mountain Lion 346
Panther 295, 477, 898
Puma 295, 346
Pumpkin Tapeworm ..... (see *Taenia cucurbitina*)
Puppy, Mud ..... (see *Necturus maculosus*)
Purple Finch ..... (see *Carpodacus purpureus*)
Purple Martin ..... (see *Progne subis*)
Pygmy Shrew ..... (see *Sorex hoyi*)
Pylodictis olivaris Raf., 1818 703
Flathead Catfish 703

R

Rabbit ..... (see *Lepus sylvilagus*)
Rabbit, European ..... (see *Oryctolagus cuniculus*)
Raccoon, Northern ..... (see *Procyon lotor*)
Racer, Black ..... (see *Coluber*)
Rails [bird] ..... (see *Rallidae*)
Rajidae 709
Skate [fish] 709
Rallidae 718
Rails [bird] 718
Rallus giganteus Bonaparte ... (see *Aramus guarauna*)
Rangifer tarandus L., 1758 ..... 352, 766
Caribou 352, 766
Reindeer 766
Rat, Norway ..... (see *Rattus norvegicus*)
Rat, Ord's Kangaroo ..... (see *Dipodomys ordii*)
Rattlesnake ..... (see *Crotalus horridus*)
Rattlesnake, Canebrake ..... (see *Crotalus horridus*)
Rattlesnake, Eastern Diamondback ..... (see *Crotalus adamanteus*)
Rattlesnake, Timber ..... (see *Crotalus horridus*)
Rattus norvegicus Berkenhout, 1769 756
Norway Rat 756
Red Bass ..... (see *Lutjanus coatesi*)
Red Bat ..... (see *Lasiurus borealis*)
Red Crossbill ..... (see *Loxia curvirostra*)
Red Fox ..... (see *Vulpes vulpes*)
Red Squirrel ..... (see *Tamiasciurus hudsonicus*)
Red Wolf ..... (see *Canis rufus*)
Red-breasted Nuthatch ..... (see *Sitta canadensis*)
Red-headed Woodpecker ..... (see *Melanerpes erythrocephalus*)
Redbird, Summer ..... (see *Piranga rubra*)
Redhead Duck ..... (see *Aythya americana*)
Redpoll, Common ..... (see *Carduelis flammea*)
Reed-bird ..... (see *Dolichonyx oryzivorus*)
Regulus Cuvier, 1800 716
Regulus calendula L., 1766 716
Ruby-crowned Kinglet 715
Regulus crestata ..... (see *Regulus satrapa*)
Regulus satrapa Lichtenstein, 1823 716
Regulus crestata 716
Golden-crowned Kinglet 715-16
Reindeer ..... (see *Rangifer tarandus*)
Rhinocerus 477, 651, 660, 662
Rhinolophus ferrumequinum Schreb., 1774 664
Greater Horseshoe Bat 664
Rice-bird ..... (see *Dolichonyx oryzivorus*)
Robber Fly ..... (see *Asilus*)
Robin ..... (see *Turdus migratorius*)
Rocky Mountain Sheep ..... (see *Ovis canadensis*)
Rose Chafer ..... (see *Macrodactylus subspinosus, Melolantha melolantha*)
Rubicola americana ..... (see *Sialia sialia*)
Ruby-crowned Kinglet ..... (see *Regulus calendula*)
Ruby-throated Hummingbird ..... (see *Archilochus colubris*)

S

Sabertooth Cat ..... (see *Smilodon*)
Salamander, European cave ..... (see *Proteus*)
Salamander, Georgia ..... (see *Geomys pinetis*)
Salamander, Spotted ... (see *Ambystoma maculatum*)
Salamandra alleganiensis Daudin, 1803 ..... (see *Cryptobranchus alleganiensis*)
Salamandra gigantea Barton, 1808 ..... (see *Cryptobranchus alleganiensis*)
Salamandra horrida Barton, 1808 ..... (see *Cryptobranchus alleganiensis*)
Salamandra maculata Green, 1818 ..... (see *Ambystoma maculatum*)
Salamandra maxima Barton, 1808 ..... (see *Cryptobranchus alleganiensis*)
Salamandra venenosa Daudin, 1803 ..... (see *Ambystoma maculatum*)
Salmo fario 74

Salmo salar L., 1758 707
Atlantic Salmon 707
Salmo trutta L., 1758 704-05
European Brown Trout 705
Salmon 704, 705, 707, 712
Salmon, Atlantic ..... (see *Salmo salar*)
Sarcoramphus papa L., 1758 721
Vultur papa L., 1758 101
Vultur sacra Bartram 721
King Vulture 101, 721
Sayornis nigricans Swainson, 1827 345
Muscicapa nigricans 345
Rocky Mountain Flycatcher 345
Sayornis phoebe Latham, 1790 343-44
Eastern Phoebe 344
Muscicapa nunciola 344-45
Scalope Barton ..... (see *Gazella dorcas*)
Scalopus aquaticus L., 1758 763
Sorex aquaticus L., 1758 763
Eastern Mole 763
Scarlet Ibis ..... (see *Eudocimus ruber*)
Scarlet Tanager ..... (see *Piranga rubra*)
Schreber's Yellow Bat ..... (see *Scotophilus nigrita*)
Sciurus L., 1758 ..... 550, 585, 760-61, 898, 923
Squirrel 760
Sciurus ludovicianus Custis, 1806 (see *Sciurus niger*)
Sciurus niger L., 1758 760
Sciurus ludovicianus Custis, 1806 ..... 760, 923
Black Squirrel 760
Eastern Fox Squirrel 760
Sciurus pinetus Barton 761
Sciurus striatus Pallas, 1778 ..... (see *Tamias sibiricus*)
Scoliophus atlanticus Bigelow, 1817 289
Sea Serpent [deformed snake] 289
Scolopaceous Courlan ..... (see *Aramus guarauna*)
Scolopax L., 1758 726
Woodcock 714, 726
Scolopax minor J. F. Gmelin, 1789 726
American Woodcock 726
Scolopax rusticola L., 1758 726
Eurasian Woodcock 726
Scalope ..... (see *Gazella dorcas*)
Scotophilus nigrita Schreb., 1774 663
Vespertilio nigrita Schreb., 1774 663
Schreber's Yellow Bat 663
Sea Otter ..... (see *Enhydra lutris*)
Sea Serpent ..... (see *Scoliophus atlanticus*)
Seba's Short-tailed Bat ..... (see *Carollia perspicillata*)
Semotilus atromaculatus Mitchill, 1818 708
Creek Chub 708
Serotine Bat ..... (see *Eptesicus serotinus*)
Serpent, Sea ..... (see *Scoliophus atlanticus*)
Seventeen Year Cicada (see *Magicicada septendecim*)
Shark 706
Sharp-winged Day Owl ..... (see Strix diurnalis)
Sharp-winged Owl ..... (see Strix peregrinator)
Sheep, Rocky Mountain ..... (see *Ovis canadensis*)
Shrew, Miniscule ..... (see *Sorex minutissima*)
Shrew, Pygmy ..... (see *Sorex hoyi*)
Shrike, Northern ..... (see *Lanius excubitor*)
Sialia sialia L., 1758 716
Bluebird 715-16
Rubicola americana 716
Siberian Chipmunk ..... (see *Tamias sibericus*)
Siberian Mammoth ..... (see *Mammuthus primigenius*)
Silk Worm ..... (see *Bombyx mori*)
Silurus L., 1758 703
Catfish [Eurasian] 703-04
Siredon lermaensis Smith & Taylor, 1948 ..... (see *Ambystoma lermaense*)
Siren Osterdam, 1766 ..... 357, 363, 371, 377, 386, ... 388, 398, 407, 547, 559, 607, 613, 670-71, ... 683, 685, 689-92, 825, 833, 836, 885, ... 901, 903, 913, 917, 942, 1041
Siren, Greater ..... (see *Siren lacertina*)
Siren lacertina Osterdam, 1766 [1769] ..... 357, 377, ... 386, 388, 407, 559, 613, 670, 683, 685, ... 689-92, 825, 885, 901, 903, 913, 942, 1041
Muraena siren J. F. Gmelin, 1789 683
Syren lacertina Custis, 1807 ..... 683-85, 834
Greater Siren 683, 685, 689, 1041
Siren maculosa Raf., 1818 ..... (see *Necturus maculosus*)
Siren quadrupeda [Barton name] ..... (see *Amphiuma tridactylum*)
Sitta L., 1758 ..... 329-30, 335-36, 347, 720
Nuthatch 329-30, 335, 345, 347, 720
Sitta canadensis L., 1766 ..... 335-36, 720
Red-breasted Nuthatch 335
Sitta capite nigra ..... (see *Sitta pusilla*)
Sitta carolinensis Latham, 1790 335
White-breasted Nuthatch 335
Sitta europea L., 1758 720
European Wood Nuthatch 720
Sitta pusilla Latham, 1790 335
Brown-headed Nuthatch 335
Sitta capite nigra 335-36
Skate ..... (see Rajidae)
Skunk, Spotted ..... (see *Spilogale putorius*)
Skunk, Striped ..... (see *Mephitis mephitis*)
Sloth, Ground ..... (see *Megatherium*)
Smilodon Lund, 1842 [fossil] 304, 774
Sabertooth Cat 304, 774
Smooth Softshell Turtle ..... (see *Apalone mutica*)
Snake Bird ..... (see *Anhinga anhinga*)
Snake, Worm ..... (see *Amphisbaena*)
Snow Bunting ..... (see *Plectrophenax nivalis*)
Snowshoe Hare ..... (see *Lepus americanus*)
Sora ..... (see *Porzana carolina*)
Sorex L., 1758 ..... 543, 669, 755, 763, 901
Sorex aquaticus L., 1758 ..... (see *Scalopus aquaticus*)
Sorex cristatus L., 1758 ..... (see *Condylura cristata*)
Sorex hoyi Baird, 1857 543
Pygmy Shrew 543
Sorex minutissimus Zimmermann, 1780 ..... 763, 901
Miniscule Shrew 763, 901
Southeastern Pocket Gopher ..... (see *Geomys pinetis*)
Southern Flying Squirrel ..... (see *Glaucomys volans*)
Southern Opossum ..... (see *Didelphis marsupialis*)
Spanish Fly ..... (see *Lytta vesicatoria*)
Sparrow, Hawk ..... (see *Accipiter nisus*)
Sparrow, House [European] (see *Passer domesticus*)
Sparrow, Reed ..... (see *Cistothorus palustris*)
Spectral Bat ..... (see *Vampyrum spectrum*)
Spermophilus Cuvier, 1825 537
Citellus Oken, 1816 ..... 537, 898
Ground Squirrel 537, 898
Spermophilus citellus L., 1766 898
Mus citellus L., 1766 ..... 537, 898
European Ground Squirrel ..73, 537, 754, 898
Spermophilus tridecemlineatus Mitchill, 1821 537
Thirteen-lined Ground Squirrel 537

Sphingidae 677
Sphinx Moth 294, 677, 902
Sphinx Moth ..... (see Sphingidae)
Spilogale putorius L., 1758 769
Viverra putorius L., 1758 769
Polecat 769
Spotted Skunk 769
Spiny Softshell Turtle ..... (see *Apalone spinifera*)
Spotted Gar ..... (see *Lepisosteus oculatus*)
Spotted Salamander ..... (see *Ambystoma maculatum*)
Spotted Skunk ..... (see *Spilogale putorius*)
Squirrel ..... 43, 73-74, 266, 295, 311, 349, 399, 476, 537, 585, 695-96, 706, 734, 751, 754, 760-62, 888, 923 (see *Cynomys, Glaucomys, Spermophilus, Sciurus, Tamiasciurus*)
Squirrel, American Flying ..... (see *Glaucomys*)
Squirrel, Barking ..... (see *Cynomys ludovicianus*)
Squirrel, Black ..... (see *Sciurus niger*)
Squirrel, Eastern Fox ..... (see *Sciurus niger*)
Squirrel, Flying ..... (see *Glaucomys*)
Squirrel, Ground ..... (see *Spermophilus*)
Squirrel, Prairie ..... (see *Cynomys ludovicianus*)
Squirrel, Red ..... (see *Tamiasciurus hudsonicus*)
Squirrel, Southern Flying ..... (see *Glaucomys volans*)
Stag-moose ..... (see *Cervalces scotti*)
Stargazer [Fish] ..... (see *Astroscopus*)
Star-nosed Mole ..... (see *Condylura cristata*)
Steppe Lemming ..... (see *Lagurus lagurus*)
Stoat ..... (see *Mustela erminea*)
Stone Buck ..... (see *Antilope cervicarpa*)
Striped Field Mouse ..... (see *Apodemus agrarius*)
Striped Pole Cat ..... (see *Mephitis mephitis*)
Striped Skunk ..... (see *Mephitis mephitis*)
Striped Weasel ..... (see *Mephitis mephitis*)
Strix acclamator Bartram, 1791 ..... (see *Strix varia*)
Strix diurnalis Barton 714
Sharp-winged Day Owl 714
Strix peregrinator Bartram 714
Sharp-winged Owl of Bartram 714
Strix varia Barton, 1799 715
Barred Owl 715
Strix acclamator Bartram, 1791 715
Strix varius Bartram, 1791 715
Strix varius Bartram, 1791 ..... (see *Strix varia*)
Strix virginiana J. F. Gmelin, 1788 ..... (see *Bubo virginianus*)
Sturgeon ..... (see *Acipenser*)
Summer Duck ..... (see *Aix sponsa*)
Summer Redbird ..... (see *Piranga rubra*)
Summer Tanager ..... (see *Piranga rubra*)
Sus L., 1758 ..... 477, 663, 774
Hog 477, 663, 774
Sus scrofa L., 1758 767
Pig, Domestic 767
Sus tajacu L., 1758 ..... (see *Pecari tajacu*)
Swallow, Barn ..... (see *Hirundo rustica*)
Swedish Dalripa ..... (see *Lagopus lagopus*)
Swift, Chimney ..... (see *Chaetura pelagica*)
Swift, Edible-nest ..... (see *Aerodramus*)
Sylvilagus floridanus J. A. Allen, 1890 753
Cottontail, Eastern 753
Wild Rabbit 93, 174, 196, 753, 768
Symphorus nematophorus Bleeker, 1860 706
Chinaman fish 706
Synanthedon exitiosa Say, 1805 675
Aegeria exitiosa Say, 1805 675
Peach Tree Borer 675
Syren lacertina Custis, 1807 ..... (see *Siren lacertina*)
Syren quadrupeda Custis, 1807 ..... (see *Amphiuma tridactylum*)

T

Tadigrada 769, 896
Taenia cucurbitina L., 1758 517
Pumpkin Tapeworm 517
Tahuglauk ..... (see *Ovis canadensis*)
Talpa L., 1758 ..... 550, 669, 757
Eurasian Mole 669
Talpa longicaudata 669
Talpa rubra 669
Tamias sibiricus Laxmann, 1769 ..... 752, 761
Sciurus striatus Pallas, 1778 ..... 752, 761
Siberian Chipmunk 752, 761
Tamias striatus L., 1758 ..... 752, 761
Eastern Chipmunk 752, 761
Tamiasciurus hudsonicus Erxleben, 1777 761
Red Squirrel 761
Tanager, Summer ..... (see *Piranga rubra*)
Tanager, Western ..... (see *Piranga ludoviciana*)
Tantalus ephouskyca Barton ..... (see *Aramus guarauna*)
Tantalus pictus Bartram ..... (see *Aramus guarauna*)
Tantalus ruber L., 1766 ..... (see *Eudocimus ruber*)
Tapajaxin ..... (see *Phrynosoma cornutum*)
Tapeworm, Pumpkin ..... (see *Taenia cucurbitina*)
Taxidea taxus Schreb., 1777 ..... 588, 751, 770, 1040
American Badger 588, 751, 769-70, 1040
Tayassu tajacu angulatus Cope ..... (see *Pecari tajacu*)
Tayè ..... (see *Ovis canadensis*)
Testudo caelata Barton ..... (see *Glyptemys insculpta*)
Testudo insculpta LeConte, 1830 ..... (see *Glyptemys insculpta*)
Tetrao urogallus L., 1758 310
Urogallus minor 310
Willow Ptarmigan 310
Thirteen-lined Ground Squirrel ..... (see *Spermophilus tridecemlineatus*)
Thistlebird ..... (see *Carduelis tristis*)
Thomomys talpoides Richardson, 1828 757
Northern Pocket Gopher 757
Three-toed Amphiuma ..... (see *Amphiuma tridactylum*)
Three-toed Jerboa ..... (see *Dipus*)
Thryothorus ludovicianus Latham, 1790 722
Carolina Wren 722
Tilapia nilotica L., 1758 74
Perca nilotica L., 1758 74
Perch 74
Timber Rattlesnake ..... (see *Crotalus horridus*)
Torpedinidae 709
Torpedo Ray 709
Trichechus dugon Mueller, 1776 ..... (see *Dugong dugon*)
Trichechus manatus L., 1758 343
Manatee 343
Trionyx muticus Lesueur, 1827 ..... (see *Apalone mutica*)
Trionyx spiniferus Lesueur, 1827 ..... (see *Apalone spinifera*)
Trochilus L., 1758 ..... 719, 736
Trochilus colubris L., 1758 ..... (see *Archilochus colubris*)

Troglodytes aedon Vieillot, 1809.....634, 727
Motocilla domestica Bartram.....714
House Wren.....634, 725, 727
Trout, European Brown.....(see *Salmo trutta*)
Tundra Vole .....(see *Microtus oeconomus*)
Turdus migratorius L., 1766 .....
..... 451, 716, 719, 723, 725
Robin ..... ix, 73, 451, 715-16, 719, 723
Turdus poliglottus L., 1758.....
..... (see *Mimus polyglottus*)
Turkey.....(see *Meleagris gallopavo*)
Turkey Buzzard.....(see *Cathartes aura*)
Turkey Vulture .....(see *Cathartes aura*)
Turtle, Smooth Softshell ..... (see *Apalone mutica*)
Turtle, Spiny Softshell..... (see *Apalone spinifera*)
Turtle, Wood..... (see *Glyptemys insculpta*)
Tusa hernandisii Barton.....
.....(see *Zygogeomys trichopus*)
Tuza ...(see *Geomys pinetis, Zygogeomys trichopus*)
Tuza, Mexican .....(see *Zygogeomys trichopus*)
Tweeg.....(see *Cryptobranchus alleganiensis*)
Two-winged Flying Fish..... (see *Exocoetus volitans*)
Tyrannus Lacépède, 1799.....720
Kingbird.....720
Tyrannus tyrannus L., 1758 720
Lanius tyrannus L., 1758.....720
Eastern Kingbird 720

U

Urocyon cinereoargenteus Schreb., 1775....295, 771
Gray Fox.....295, 771
Ursus L., 1758 .....295, 346,
..... 437, 586, 588, 669, 764, 767-68
Bear.....41, 295, 299, 312, 326, 346, 437,
.....440, 597, 767-69, 853,
Ursus americanus Pallas, 1780.....295, 346, 437, 768
American Black Bear.....295, 437, 768
Ursus arctos L., 1758.....764, 767-68
Grizzly Bear.....295, 764, 767-68
Ursus lotor L., 1758.....(see *Procyon lotor*)
Ursus luscus L., 1758 .....(see *Gulo gulo*)
Ursus maritimus Phipps, 1774.....295, 767
Polar Bear.....295, 767
Ursus meles L., 1758.....(see *Meles meles*)

V

Vampyrum spectrum L., 1758.....663
Vespertilio spectrum L., 1758 663
Spectral Bat.....663
Vespa maculata L., 1763 .....
.....(see *Dolichovespula maculata*)
Vespertilio L., 1758.....663, 664, 751
Vespertilio barbastellus Schreb., 1774.....
.....(see *Barbastella barbastellus*)
Vespertilio cephalotes Pallas, 1767.....
..... (see *Nyctinene cephalotes*)
Vespertilo fuscus P. Beauv., 1796.....
.....(see *Eptesicus fuscus*)
Vespertilio leporinus L., 1758.....
.....(see *Noctilio leporinus*)
Vespertilio murinus L., 1758 663
Particolored Bat.....663
Vespertilio nigrita Schreb., 1774.....
.....(see *Scotophilus nigrita*)
Vespertilio noveboracensis.....(see *Lasiurus borealis*)
Vespertilio perspicillatus L., 1758.....
.....(see *Carollia perspicillata*)
Vespertilio pictus Pallas, 1767 ..(see *Kerivoula picta*)
Vespertilio pipistrellus Schreb., 1774.....
.....(see *Pipistrellus pipistrellus*)
Vespertilio pruinosus Plummer, 1844.....
.....(see *Lasiurus cinereus*)
Vespertilio rubellus P. Beauv., 1796 .....
.....(see *Lasiurus borealis*)
Vespertilio serotinus Schreb., 1774.....
.....(see *Eptesicus serotinus*)
Vespertilio spasma L., 1758.....
.....(see *Megaderma spasma*)
Vespertilio spectrum L., 1758.....
.....(see *Vampyrum spectrum*)
Vespertilio vampyrus L., 1758.....
.....(see *Pteropus vampyrus*)
Virginia Opossum .....(see *Didelphis virginiana*)
Viverna nasua .....(see *Nasua narica*)
Viverra putoris L., 1758..... (see *Spilogale putorius*)
Vole, Eurasian Social .....(see *Microtus oeconomus*)
Vole, European Common .....(see *Microtus arvalis*)
Vole, European Water.....(see *Arvicola terrestris*)
Vole, Tundra .....(see *Microtus oeconomus*)
Vulpes vulpes L., 1758.....295, 771
Canis vulpes L., 1758.....295, 771
Red Fox.....295, 771
Vultur atratus Wilson, 1814....(see *Coragyps atratus*)
Vultur aura L., 1758.....(see *Cathartes aura*)
Vultur papa L., 1758.....(see *Sarcoramphus papa*)
Vultur sacra Bartram.....(see *Sarcoramphus papa*)
Vulture 101, 400, 721
Vulture, Black.....(see *Coragyps atratus*)
Vulture, King .....(see *Sarcoramphus papa*)
Vulture, Turkey.....(see *Cathartes aura*)

W

Walrus .....(see *Odobenus rosmarus*)
Wapiti .....(see *Cervus elaphus*)
Warbler, Myrtle.....(see *Dendroica coronata*)
Warbler, Yellow-rumped..(see *Dendroica coronata*)
Water Dog.....(see *Ambystoma lermaense,*
..... *Necturus maculosus*)
Water-turkey.....(see *Anhinga*)
Waxwing, Cedar.....(see *Bombycilla cedorum*)
Weasel .....(see *Mustela*)
Weasel, Long-tailed.....(see *Mustela frenata*)
Weasel, Striped .....(see *Mephitis mephitis*)
Weevil.....(see *Curculio*)
Western Barbastelle Bat .....
..... (see *Barbastella barbastellus*)
Western Tanager.....(see *Piranga ludoviciana*)
Wheat Fly .....(see *Mayetiola destructor*)
Whip-poor-will .....(see *Caprimulgus vociferus*)
White-breasted Nuthatch..... (see *Sitta carolinensis*)
White-faced Hornet ..(see *Dolichovespula maculata*)
White-nosed Coati .....(see *Nasua narica*)
White-tailed Deer.....(see *Odocoileus virginianus*)
Widow, Chuck-will's .....
.....(see *Caprimulgus carolinensis*)
Willow Ptarmigan.....(see *Tetrao urogallus*)
Wilson's Plover .....(see *Caradrius wilsonia*)
Wishtonish .....(see *Cynomys ludovicianus*)
Woapink.....(see *Didelphis virginiana*)
Wolf, Gray.....(see *Canis lupus*)
Wolf, Red .....(see *Canis rufus*)

Wolverine, American ..... (see *Gulo gulo*)
Wood Duck ..... (see *Aix sponsa*)
Wood-peewee, Eastern ..... (see *Contopus virens*)
Wood Turtle ..... (see *Glyptemys insculpta*)
Woodchuck ..... (see *Marmota monax*)
Woodcock ..... (see *Scolopax*)
Woodcock, American ..... (see *Scolopax minor*)
Woodcock, Eurasian ..... (see *Scolopax rusticola*)
Woodland Muskox ... (see *Bootherium bombifrons*)
Woodpecker, Golden-winged ..... (see *Colaptes auratus*)
Woodpecker, Lewis ..... (see *Melanerpes lewis*)
Woodpecker, Pileated ..... (see *Dryocopus pileatus*)
Woodpecker, Red-headed ..... (see *Melanerpes erythrocephalus*)
Woodrat, Eastern ..... (see *Neotoma floridana*)
Woolly Mammoth ..... (see *Mammuthus*)
Worm Snake ..... (see *Amphisbaena*)
Worm, Canker ..... (see *Phalaena vernata*)
Worm, Glow ..... (see *Lampyris noctiluca*)
Worm, Silk ..... (see *Bombyx mori*)
Wrass [Fish] ..... (see *Labrus*)
Wren, Carolina ..... (see *Thryothorus ludovicianus*)
Wren, House ..... (see *Troglodytes aedon*)
Wren, Marsh ..... (see *Cistothorus palustris*)
Wren, Yellow-throated ..... (see Certhia floridana)

Y

Yellow-billed Cuckoo ..... (see *Coccyzus americanus*)
Yellow-rumped Warbler ... (see *Dendroica coronata*)

Z

Zapus hudsonius Zimmermann, 1780 ..... xiii, 281, 286, *585*, 752-*55*, 905
Dipus hudsonius Zimmermann, 1780 753
Dipus americanus Barton, 1799 ..... 371, *585*, 660, 664, 752, 754-*55*, 890, 905
American Jerboa 752
Canadian Jerboa 752
Dipus longipes 753, 754
Dipus mellivorus [Barton name] 752, *755*
Meadow Jumping Mouse ..... xiii, 286, 296, *585*, 905
Meriones americanus [Barton name] *755*
Wank-peh-sous [Mohican name] 754
Zygogeomys trichopus Merriam, 1895 ..... 398, 490, 543, 757, 901
Mexican Tuza [Tusa, *sic*] 398, 490, 757-58, 918
Michoacan Pocket Gopher 398
"Tucan" Hernández, 1651 ..... 757, 901
"Tozan" Clavigero 757-58, 901, 918
Tusa hernandisii Barton 398, 543, 758

Index of People

The following index of people mentioned in this text is not intended to be a comprehensive index, but all historical and scientific figures are listed, along with Benjamin Smith Barton's family members and medical students. Incidental characters, such as booksellers, business owners, and non-historical acquaintances may not be listed. Every effort was made to fully identify all persons indexed, but some unknown first names are noted by a question mark. Names are indexed from the main text but not appendices, with the exception of those listed in the Barton Genealogy (Appendix III) and the Roster of Barton's Medical Pupils (Appendix II).

Ed. Eileen P. Duggan

A

Abbot, John 493, 575-78, 593, 626-37, 681-82, 725-26, 736
Abbott, Robert 517, 919
Abercorn, Lord 670
Acharius, Erik 376-77, 379, 571
Acosta, Jose da 275, 679, 771
Adair, James 108, 336, 338
Adams, President John 137, 139, 165, 215, 219, 229-30, 282, 287, 300-301, 314, 315, 392, 845, 849, 994
Adelung, Johann C. 244, 272
Adlum, John 270, 385, 569
Aguiar, Ordeñel y 252
Aiken, J. 323
Aiton, William 412-13, 424-26, 482, 486, 571, 580, 604, 609, 812
Albers, Johann Abraham 384-85, 748, 815, 825, 833
Alden, Ebenezer 919
Alexander, Ashton 215
Alexander, William M. 146
Allen, Ebenezer 822
Allen, Glover M. 770
Allen, Paul 545, 872
Allenson, N. S. 463
Allison, Dr. W. S. 269, 667
Allston, Washington 33
Almack, William Sr. 95
Almack, William Jr. 95
Alston, Charles 82, 89, 563
Anderson, Dr. Alexander 93
Anderson, Edward H. 919
Anderson, James 89
André, Gen. John ..... 59, xvi
Andrews, Rev. John 17, 59, 60, 61, 67, 68, 137, 145, 166, 118, 207, 228, 274, 299, 623-24, 780
Antes, Col. Frederick 191, 737
Appleton, Thomas 290, 820
Archer, John 96, 196
Armstrong, John 31, 811
Arrowsmith, Aaron 431
Astor, John Jacob 538, 539, 865
Athanase, Charles 825
Atlee, Edwin Augustus 796
Audubon, John James 96, 444-45, 652, 770, 826
Austin, Archer 64
Austin, Dr. John 220

B

Bachman, Rev. John ..... xxiv, 445, 485
Bacon, Francis 328
Baldwin, Dr. William 26, 105, 109, 196, 206, 271, 294, 505, 511, 522, 544, 557, 571, 612, 677, 782, 803-05, 809, 951
Balfour, Isaac 84-85
Ball, B. W. 704
Bancroft, Dr. Edward 450, 700, 709
Banister, Rev. John ..... xii, 144, 179, 183, 263, 356, 474, 523, 554, 570, 583, 592, 594-95, 597-98, 608-09, 617, 695, 697-98, 703, 743, 772
Banks, Sir Joseph ..... xii, xxii, xxvi, 62, 66, 83, 90, 92-93, 103, 108, 110, 118-20, 130, 156, 276, 279, 284, 294, 312, 325-26, 329, 352-58, 372, 377, 381, 389, 403, 431, 445, 457, 467, 473, 484-86, 518, 519-20, 547, 563, 598, 611, 613, 627, 635, 685, 689-90, 814, 827, 836, 867, 875, 878, 887, 891, 900, 909, 915
Barber, Thomas 920
Barclay, Robert 329
Bard, Sally 8
Bard, Dr. Samuel 8, 37, 146, 150
Bard, Dr. Vincent 150
Barlow, Joel 59, 390, 392, 636, 823, 867
Barnes, Dr. John 344-45, 355, 465
Barnes, Joseph 344-45, 355
Barnes, Julius Steele 920
Barnwell, William 413, 420, 892
Bartalini, Dr. Biagio 494-95
Barton, Anne (neé Frazer) 18
Barton, Catherine (neé Graeff) 56, 631, 862-63
Barton, Catherine Amelia 56
Barton, Catherine (neé Clemson) 58
Barton, Charles B. 18, 35
Barton, Charles Crillon 29, 30
Barton, Cora (neé Livingston) ..... vii, xvi, 18, 864-65, 974, 980, 985
Barton, Daniel Walker 56
Barton, David Cradock 4, 5, 38
Barton, David Rittenhouse 10, 34, 40, 56-58, 631, 860, 862
Barton, David Walker 56
Barton, Edmund Hill 57-58
Barton, Edward Hall 57, 465
Barton, Elizabeth (neé Rhea) 18, 26
Barton, Elizabeth Sophia 18

Barton, Esther (neé Rittenhouse) ..... 4-5, 7, 12, ... 17, 25, 30, 37-38, 41, 45, 56
Barton, Esther.....40
Barton, Esther (neé Coxe) 44
Barton, Esther R. (neé Sergeant) 14
Barton, Esther Rittenhouse.....56
Barton, George.....40
Barton, George Washington.....57-58
Barton, Hetty Ann.....13, 18, 23, 45, 53
Barton, Rev. John.....1-2
Barton, John Graeff.....33, 57
Barton, John Rhea..... xvi, 18, 19, 33, 58
Barton, Juliana (daughter of Thomas and S. Higginson Barton).....40
Barton, Juliana (daughter of Richard Peters and Martha Walker Barton) 40, 52-53, 56
Barton, Martha (neé Walker) 11, 45, 53, 55, 935
Barton, Mary (neé Penington) .....xv, 18, 22-23, 31, ... 34, 39, 53-56, 98, 149, 162-65, 191, 282, ... 286, 509, 547, 607, 817, 825, 832, 835-36, ... 838-40, 848, 852, 861-63, 866, 871
Barton, Mary.....56
Barton, Mary Graeff.....56
Barton, Mary Rhea..... 18, 45
Barton, Matthias... 10, 14, 22, 34, 38-39, 41-45, 299, ... 349, 413, 492, 606, 708, 723, 771, 891, 897
Barton, Nancy.....18
Barton, Rev. Richard..... 1-3, 864
Barton, Richard Peters.....10-11, 18, 20, 37, 39-41, ... 45-56, 164, 246, 292-93, 299, 311, 435, ... 456, 476, 507-08, 529, 533, 643, 646, ... 675, 718, 775, 811, 862
Barton, Richard Walker.....56
Barton, Robert Rittenhouse.....50, 55, 58, 152-53, ... 772, 859
Barton, S. (neé Higginson)..... 28, 40
Barton, Sarah Esther ..... xxii, 25, 53-54, 132, 286, ... 409, 509, 832, 839, 862
Barton, Sarah (neé De Normandie) Bard..... ..... xvi, 8, 10, 31, 117-18
Barton, Susan Ridgway..... 18, 40
Barton, Susanna Juliana 18, 40, 53
Barton, Rev. Thomas ..... xxi, 1, 3-15, 17, 20-21, 25, ... 30-32, 37-38, 59-60, 79, 118, 121, 137, ... 150, 163, 299, 642, 859, 865
Barton, Thomas Jr. 1, 10, 38-40
Barton, Thomas Pennant...xv, xvi, xxii, xxv, xxvi, 11, ... 18, 25, 30, 32, 54-55, 57-58, 162, 164-65, ... 353, 509, 631, 649, 691, 708, 825, 828-29, ... 831-32, 834-36, 839-40, 844, 862-65, 882
Barton, Thomas Walker.....18, 34-37, 54, 56, 271
Barton, William (son of John Barton)..... 6, 10, 150
Barton, William (1754-1817)..... xv, xvi, ... xxii, 1, 9, 15, 17-26, 28, 29, 31, 34, 38-40, .. 44, 55, 64, 68, 79, 104-06, 110, 112-18, 120, ... 132, 135, 273, 299, 309, 321, 446-47, 615, ... 631, 642, 646, 783, 811, 838, 847, 849, 864
Barton, William Paul Crillon..... xv, xvi, xxv, xxvi, 6, ... 14-15, 18, 20-21, 26-30, 32, 35, 58, 79, 112, ... 114, 141-42, 195, 201, 206, 305, 320-21, .. 390, 405, 407, 465, 523, 528, 565, 577, 627, ... 785, 800, 807-09, 829, 839-44, 849, 851, ... 864-66, 870, 875, 983
Barton, William Matthias..... 23, 54, 56
Bartram, James Howell..... 190, 278, 291, 295, ... 409-412, 419, 467, 788
Bartram, John..... 63-65, 75, 83-84, 100-01, 103, ... 115, 262, 278, 299, 326-327, 409, 443, 475, .. 568, 570, 583, 604, 626, 639, 644, 657, 676, ... 686, 721, 771-73, 777, 788, 879
Bartram, Moses.....65
Bartram, William..vii, viii, xii, xiii, xvii, xxv, xxvi, 39, ... 64, 67, 75, 77, 79, 83-84, 100-01, 104-08, ... 110-15, 120, 129, 168, 170, 184, 197, 237, ... 252, 262, 268, 275-77, 283-84, 287, 295-96, 302-03, 309, 311, 322, 329, 335, 343, 345-46, ... 351-52, 360, 381, 406-07, 412-14, 432, ... 435, 443, 449-50, 466, 475-76, 501, 504, ... 506, 517, 527, 541, 569-70, 572, 585, 601, . 603-04, 606-607, 611, 647, 660, 672, 679-81, ... 686, 692-93, 699, 703, 708, 713-14, 723, ... 726, 732-33, 787-88, 790-91, 806, 809
Batsch, Augustus Johann Georg Carolus 282, 845
Baudin, Nicholas.....xxiv, 499, 561
Bayard, Nicholas 18
Beasley, Dr. Peter 571
Beatty, John 789
Beauvois, Ambroise de Palisot..... xvii, xxii, 45, 171, ... 312, 378, 391, 499, 561, 694, 751, 847, 897
Beddoes, Thomas 145-46, 234, 269
Bedford, Dr. John R. 269, 667
Behring, Vitus.....108
Belknap, Rev. Jeremy ..... 104, 139, 161, 205, 212, ... 281, 284-85, 300, 313, 315, 381, 383, 528, ... 580-85, 587, 679, 747, 753, 810, 825, 845
Bell, Capt. 309
Bellini, Lorenzo 226
Benezet, Dr. Samuel.....479
Benson, Judge Egbert 717
Bentley, Rev. William.....161, 825
Bentzon, Adrian Benjamin.....289-90
Berewood, Edward 108
Berger, Johann Gottfriend.....186
Bergius, Peter Jonas 376
Berkeley, Robert 921
Bethere, ? 708
Betton, Samuel Jr. 462, 465, 921
Beverley, Robert.....696
Biddle, Col. Clement 849, 854
Biddle, J. B.....783
Biddle, Nicholas..... 23, 545, 614, 872
Bigelow, Dr. Jacob .....xxv, 84, 185, 195, 198, 202, 233, 289, 463-64, 579, 590, 630-31, 670, 797, ... 800, 802-03, 809, 817, 846, 869-70, 921
Billings, Capt. William..... 117, 130-34
Black, John.....178
Black, Dr. Joseph..... 80, 84, 86, 97, 103
Blackburn, Ashton.....326, 706
Blagden, Charles 90, 486
Blair, Rev. Hugh 15
Blanton, Wyndham 592-93
Bleakley, John 99
Blissett, Francis.....33
Bloodgood, Dr. Joseph.....921
Blumenbach, Johann Friedrich .....97, 102, 107, ... 382-84, 392, 394-95, 403, 616, 661-64, ... 696, 699, 709, 785, 816-17, 833
Bobart, Jacob.....570
Boerhaave, Dr. Herman..... 82, 89, 186, 233, 619
Bohanman, Richard Lafon 921
Bollman, Justice Erich 387
Bolzius, Johann Martin 486
Bonaparte, Charles 726, 883

Bonaparte, Napoleon 57, 560
Bond, Dr. Thomas 141, 299
Bondini, Dr. 401-02
Bonpland, Aimé ..... xxiii, 378, 444, 446, 561, 803
Bordley, John Beale 309
Bosc, Louis Augustin G 412, 686, 720
Boudinot, Elias 19, 195, 302
Bouchardy, Etienne 865
Bowles, Richard 455, 627, 921
Boyer, Alexis 43, 620
Boykin, Dr. Samuel 196, 921
Bozman, Dr. George 667, 921
Brackenridge, Hugh 177
Brackenridge, William 177, 705
Bradbury, John Leigh ..... xxv, 421, 539, 548-51, 565, 630-31, 640
Braddock, Gen. Edward 4, 75, 131
Bradford, Thomas 314, 853-54
Bradford, William 11, 38, 231, 468-70
Brandis, Dietrich 825
Brannenan, Dr. 153, 477
Breck, Samuel 248, 287, 506-07, 639, 859
Brereton, John A. 26, 921
Brewster, David 628, 670
Brickell, Dr. John ..... xxiii, 186-87, 482, 485-90, 576, 579, 603, 607, 805, 860
Bridges, Samuel 549
Brisson, Mathurin Jacques 493, 662, 722-24
Britton, John de 403
Brockenbrough, Dr. Austin Jr. 158, 196, 921
Brodie, Sir Benjamin Collins 827-28
Brongniart, Alexandre 683
Broussonet, Pierre 561
Brown, Charles Brockden 247, 441
Brown, Dr. John 145-46, 165-66, 186, 195, 205, 221, 226, 234, 275
Brown, Dr. Richard 921
Brown, Robert 84, 86, 518, 547, 561, 523
Brown, Dr. Samuel 397-98, 477, 540, 563-65, 615, 767, 774
Browne, Patrick 677, 794
Browne, Dr. Thomas 83
Bruce, Archibald 650, 653, 655-57, 777, 821
Bruse, Dr. Edward 922
Bryant, A. 555
Bryarly, Wakeman 197, 922
Buchanan, George 117
Buchanan, James 58
Buffon, Count de 61, 75, 108, 236, 310, 325, 339, 346, 387, 406, 447, 659, 661, 713, 732, 749, 764, 767-68, 770-71, 774, 807, 810
Bullock, William 521-23, 741, 750, 766
Burns, John 196
Burwell, Lewis 922
Byrd, William II 144, 341, 743, 775
Byrd, William III 142, 144, 341

C

Cabell, Joseph C. 611, 648, 667, 679
Cabrera, Paul Felix 252, 260
Cadogan, William 200
Caldwell, Andrew 730
Caldwell, Dr. Charles ..... xv, xxvi, 62, 64, 127-28, 138, 157, 190, 192, 206, 217, 231, 244-45, 275, 305-07, 320, 468-70, 497, 616, 627, 709, 730, 798-800, 809, 841-42, 853, 865, 875, 922
Caley, George 563
Cameron, Dr. Thomas Nash 922
Camp, Dr. John H. 146, 922
Camper, A. C. 250, 547-48, 691, 816
Canajoharie, William of (Tagchenuto) 6-7, 17
Cancelli, Padre 494
Candolle, A. P. de 406, 441, 442, 496, 540, 561, 870
Carey, Matthew 76, 86, 122, 139, 161, 314, 421, 469, 472, 862, 869, 888
Carey, William 462, 557
Carrington, Dr. 769
Carson, Dr. John 318, 559, 800
Carter, Dr. Charles Walker 191, 922
Carter, Dr. Robert 146, 291, 458-59, 922
Cartier, Jacques 443
Carver, Capt. Jonathan 261, 287, 431-32, 443, 506-07, 529, 532, 700, 748, 765, 810
Casey, Dr. John A. . 152, 201-02, 478, 781, 797, 922
Cassel, Daniel K. 51, 1071
Cassin, John 335
Castiglioni, Luigi 4, 139, 170, 276, 308, 369, 433-34, 509, 550, 582, 594, 596-98, 637, 695
Castillo, Juan del 564
Catesby, Mark 269-70, 275-76, 335, 345-46, 458, 570, 595, 692, 696, 713, 718-19, 723, 741, 743, 760, 772, 775
Catherine the Great 114, 125, 235, 244, 282, 418, 880, 890
Cathalan, Stephen Jr. 820-21
Cathrall, Dr. Isaac 212
Cels, J. M. 412-13
Cervantes, Vincent de 397-99, 433, 564, 689, 758
Chambers, Campbell 150-51, 196, 922
Champneys, Dr. Benjamin 922
Channing, Dr. Walter 40, 163, 463-64, 470, 619, 800-02, 922
Chapman, Isaac 678-79
Chapman, Dr. Nathaniel 158, 168, 196, 227-29, 472, 738, 783-84, 800, 835-36, 866, 922
Charlevoix, Pierre François Xavier de. 243, 245, 431
Chastelleux, Francois L. 529, 722
Cheyne, George 200
Chouteau, Auguste 541-42
Chouteau, Pierre 541-42, 702
Chovet, Dr. Abraham 306
Church, Dr. John 922
Churchman, John 354
Claesse, Lawrence 236
Claiborne, Gov. William 271, 491
Clark, William ..... xiv, xxiii, 541-48, 770, 872
Clarke, Dr. George Rogers 541, 654, 922
Clay, Joseph 533, 633
Clavigero, Abbé Francesco Saverio 46, 126, 240, 250, 254-56, 275, 509, 560, 635, 659, 757-58, 811
Clayton, John . 275, 303, 356, 474, 570, 583-84, 592, 594-95, 598, 606, 613, 626, 772, 811
Cleaver, Dr. Isaac 923
Clinton, DeWitt ..... xxvi, 208, 280, 337, 444, 499, 700-03, 736, 741, 817-18, 829, 875
Clopper, John 934
Cloud, Joseph 817
Cloyd, Mary (neé Rittenhouse) 937
Clusius, Carolus 408
Coates, Samuel 142-43

Cobbett, William.....203, 213, 229, 231, 314
Cocke, Dr. Charles.....196, 471, 923
Cockburn, Henry.....86, 89
Cocke, Dr. James.....599, 923
Codd, Berkely.....276
Cogan, Thomas.....200
Cogdell, John S.....490
Colden, Cadwalader.....685, 696
Cole, Peter.....737
Colhoun, Samuel.....462
Collie, Alexander.....750
Collin, Rev. Nicholas.....269, 299-301, 309-10, 313, ... 315, 360, 369-73, 377, 433-34, 478, 499, ... 553, 603, 674, 700, 807, 813-14
Collins, Zaccheus... 143, 160, 415-16, 445, 448, 462, ... 465, 490, 497, 578-79, 630, 808, 817, ... 838, 865, 869
Collinson, Peter 65-66, 106, 303, 326, 363, 657, 685
Colston, Eleanor (see also Rittenhouse, Eleanor)..... ..... 5, 13
Columbus, Christopher..... ..... xi, 255, 257, 275, 334, 356, 443, 679, 770
Columella, Lucius.....716
Compton, Bishop Henry.....597
Conover, Dr. Samuel Forman.....195, 923
Conrad, Dr. Daniel.....38, 48, 178, 608
Cook, Capt. James.....13, 101, 103, 108, 110, 313, ... 358, 371, 403, 521, 571, 706
Cooper, Dr. Ashley.....621, 800
Cooper, Dr. Samuel.....185, 478
Cooper, Thomas.....188, 314, 321, 650, 865
Cooper, William.....84, 630, 851
Cope, Caleb.....xxi, 59
Cope, Edward Drinker.....683
Cope, John.....xxi, 59
Cope, Nathaniel.....141
Cope, Thomas P.....232, 957
Cope, Dr. ?.....103
Cornuti (or Cornutus), Jacques.....275
Corte-Real, Miguel.....125
Coues, Elliott..... 335, 541, 571, 720, 729, 760, 762
Cowper, William.....745, 866
Coxe, Esther (see also Barton, Esther).....44
Coxe, Dr. John Redman.....44, 155, 193, 209, 231, ... 270, 319, 321, 448, 468, 471, 831, 841, 858
Coxe, Tench.....19-20, 44
Crantz, Martin.....443
Crawford, Dr. John.....150, 156-57, 470
Crawford, William Harris.....817, 820
Cresswell, Nicholas.....69
Cullen, William.....xxi, xxv, 63-64, 80-81, 86, 89-93, ... 95, 101-02, 115, 144-46, 152, 158, 168, ... 171-75, 183, 185-86, 193-95, 200-01, 204, ... 223, 232-33, 326, 329, 593, 626, 628, 670, ... 679, 781, 784, 806, 814
Cunningham, Dr. Robert M.....39, 923
Currie, Dr. William.....199-200, 208, 213, 217-18, ... 231, 391, 450, 476-78, 784
Curtis, T.....131
Curtis, William.....802
Cushing, Ezekiel D.....923
Custis, Dr. Peter C. ....xxiii, 302, 304, 478, 492, 542, ... 549, 684-85, 757, 760, 775, 790, 791-93, ... 809, 859, 923
Cutbush, Dr. Edward.....64, 157-58, 217, 650, 676
Cutbush, James.....463-64, 472, 478, 650
Cutler, Rev. Manasseh.....121-22, 155, 268-69, 313, ... 375, 383, 447, 493, 569, 572, 577, 579-80, ... 582-91, 596, 603, 613, 627, 652, 812
Cutting, John B.....111
Cuvier, Georges.....xxv, 257, 304, 345, 383, ... 387-88, 403, 477, 547, 606, 648, 662, 667, ... 683-84, 691-92, 726, 748, 773-74, 777, 825, ... 832, 836, 844, 870

D

Da Costa (See Pereira)
Daingerfield, Dr. Henry Powen.....923
Dallas, Alexander James..... 76, 309, 432
Dampier, William.....336
Dana, James D. 673
Dante 716, 871
Darlington, Dr. William ..... xiv, xxv, 15, 146, 163, ... 185, 193, 195, 202, 271, 294-96, 448, 452, ... 459, 467, 555-58, 609, 628, 630-32, 646, ... 696, 699-700, 738-39, 803, 805-07, 809, ... 864, 869, 923
Darwin, Charles.....360, 634, 636
Darwin, Erasmus.107, 145, 175, 186, 193, 195, 314, ... 325, 329, 360, 607, 634, 636, 662, 716, 806
Dashkov, Andrew.....244, 392, 545, 565
Dashkov, Princess Catherine.....244, 392, 880
Daubenton, Louis-Jean-Marie 663, 774
Daubeny, Charles.....57-58, 598
Daudin, François.....683, 686, 692, 702
Davenport, Gen. Franklin.....32
Davenport, Sarah Barton (neé Zantzinger).....32
Davidge, Dr. John B. 216-17, 219, 478
Davis, John R. .....xxii, 139, 205, 281-82, 286, ... 290, 315, 568, 587-89, 608, 619, 647, ... 697, 747, 758, 810, 817, 846
Davy, ?.....558-59
Davy, Humphry 145, 175, 652-53
Dawkins, Henry 337
DeGeer, Baron Charles.....372
De Hart, John.....9
De Hart, William.....278
de la Motta, Dr. Jacob.....925
de Normandie, Dr. John Abraham..... .....8-10, 117-18, 476, 847
de Normandie, Sarah (Bard) ....xvi, xxi, 8, 10, 31, 117-18
De Pauw, Cornelius 107-08, 236, 254, 346
De Silva, Thomas.....413
de Soto, Ferdinand.....122-23, 254, 282, 771, 810
Dearborn, Gen. Henry .....xxiii, 18, 291
Debretton, Dr. John Balthasar 924
Decatur, Commodore Stephen.....28-29
Demarest, Anselme.....304, 307
Dencke, Christian Frederick 246, 249, 444, 811-12, 814
Denny, Major Ebenezer 717
Devèze, Jean..... 171, 207, 391
Dewees, Dr. William Potts..... .....196, 213, 228, 478, 490, 806
Dexter, George B.....924
Dexter, Samuel.....737
Dick, Dr. Elisha Cullen 286-87, 384
Dickerson, Aaron.....463
Dickson, James.....519
Dickson, Robert (called Dixon by BSB)..... .....366, 532, 538-49

Dixon, Joshua 217
Dobson, Thomas..... 38, 139, 245, 467-69, 471, 615, ... 709, 784, 823, 879
Donovan, Edward..... 712, 827
Dorsey, Dr. John Syng 159, 193, 472, 553, 616, 678, 779, 800, 866
Downey, Dr. William..... 197, 269, 458, 924
Drake, Dr. Daniel..... ...190, 195, 478, 778, 796, 805-06, 809-10, 924
Drake, Francis..... 131
Drayton, Gov. John 96, 258-59, 419, 432
Drayton, Dr. Charles Jr. 26, 924
Drury, Dr. Dru 373, 593
Dryander, Jonas 84, 110, 358, 372, 377-78
Du Pratz, Antoine Simon Le Page..... ..... vii, 110, 345-46, 541, 611, 792, 810
Du Tertre, Jean-Baptiste 740
Dudley, Dr. Benjamin Winslow..... 795, 924
Dudley, Paul 695
Duffield, Dr. Samuel..... 208, 308, 312
Dufief, Dr. Nicholas Gouin 609
Duggan, Dr. Samuel..... 283
Dunbar, James 126
Dunbar, Robert..... 738
Dunbar, William 260, 304-05, 477, 490-93, 607
Duncan, Dr. Andrew (also Andreas) 85, 98, 112, 258, 403
Duponceau, Pierre Etienne.....xiii, xxvi, 73, 249, ... 259-60, 272, 296, 833, 864, 866, 872
Dupont, Pierre Samuel..... 820
Durand, Elias..... 497
Duvall, Charles 406
Duvall, Dr. Grafton 163, 924

E

Eaton, Amos 86, 161, 405, 423
Ebeling, Christoph Daniel G.... xxii, 63, 161-62, 217, ... 383-84, 389, 403, 477, 607, 825, 844-45
Eddy, Caspar Wistar..... 417, 630-31
Edwards, A. 270
Edwards, Dr. Enoch..... 344
Edwards, George 46, 509, 716, 737, 811, 862
Edwin, David 388, 832
Eicholtz, Jacob..... 22-23
Eliot, Rev. John..... 144, 236, 243, 272, 284-86, ... 288-89, 583
Eliot, Rev. Jared..... 672
Ellicott, Andrew..... .....69-70, 73, 309, 446-47, 476, 705, 738
Elliott, Benjamin..... 312, 333
Elliott, Ephraim 479
Elliott, Stephen ..... 390, 483, 486, 490, 496, 573-75, ... 577-79, 594, 623, 627-29, 636, 677, 681, ... 758, 804-05, 816, 870
Ellis, Henry..... 397
Ellis, John..... 63, 326, 394, 709
Elmer, Dr. Johnathan..... 292
Elmer, William..... 667, 924
Engelmann, George..... 58
Enslen, Aloysius..... xii, xxiii, 294, 356, 461, 481, ... 485-86, 490, 509, 522, 573, 579, ... 681, 731, 736, 748, 758, 849
Erxleben, J. C. P..... 382, 660-61, 765
Escher-Zollikofer, Heinrich 682
Eustis, Dr. ? 777
Evans, Daniel..... 14
Evans, Eleanor (neé Rittenhouse)..... 12, 14
Evans, Lewis 337
Everett, Dr. Charles..... 269, 319, 924
Ewing, Samuel 143

F

Fabbroni, Giovanni Valentine Matteo..... 820-21
Fabricius, Johann Christian....62-63, 161-62, 373-75, ... 477, 607, 675, 677-79, 696, 716, 844
Falconer, William..... 102
Faxon, Walter..... 375
Fayssoux, Dr. Peter 96
Fenno, John..... 208, 213
Ferguson, Dr. Adam 195, 716
Ffitt, Stebbins..... 859, 925
Field, Andrew 925
Filson, John..... 122, 341
Finley, Rev. Samuel..... 61, 204
Fishbach, James..... 795
Floyd, Dr. John..... 195, 197, 201, 479, 687, 925
Foisson, Dr. Peter 925
Foisy, M. 845
Forbes, Dr. Duncan 363
Forbes, Thomas 925
Forest, Richard 537
Forster, George..... 108, 134, 282, 571
Forster, Johann Reinhold..... 87, 91, 100, 108, 134, ... 177, 240, 282, 313, 403, 431, 443, 571, 769
Forster, Dr. Thomas Ignatius Maria..... 741
Forsyth, William..... 457-58
Foster, Dr. Andrew 925
Foster, Augustus 22, 443, 646
Foster, Dr. Thomas..... 925
Fothergill, Dr. Anthony..... 187-88, 217, 231, 606
Fothergill, Dr. John ....61, 66, 79, 100-02, 106, 115, 175, 188, 306, ... 329, 360, 408, 412, 445, 448, 692, 700
Foulke, Dr. John 132, 309, 744
Fox, Edward..... 192
Francis, John W. 518, 547, 561
Francis, Thomas Willing..... 614
Franciscus, William..... 43
Franklin, Benjamin..... xxiii, 3, 13-14, 16, 18, 45, 60, ... 65, 79, 81, 105, 115, 122, 125, 137-38, 141, . 175, 194, 230-31, 244-45, 247, 274, 299-301, ... 307, 313-14, 316, 329, 343-44, 363, 392, ... 433, 462, 596, 668, 709, 807, 843, 861
Fraser, John 87, 486, 540
Frazer, Anne (see also Barton, Anne) 18, 936
Freeman, Dr. James Phillips..... 925
Freeman-Custis Expedition..... .....302, 304, 320, 492, 549, 790
Freeman, Thomas..... .....xxiii, 302, 304, 478, 492, 549, 790-92
Freitos, Dr. Antonio Caetano de 399-402
Fretagot, Marie 137
Frezier, Amadee Francis 134, 432
Frisbe, Dr. John H. 478
Froelich, Josephus Aloysius 811
Fruhauff, Rev. Frederich..... 245
Fry, Joshua..... 337, 413, 667
Fulton, Robert ..... xxi, xxiv, 38, 59, 304, 607, 823
Fyfe, Andrew 812, 823

G

Gallatin, Abraham Alfonse Albert 27, 447-48, 529-30, 817
Gama, Antonio de León y 251-52, 255
Garden, Alexander 75, 326, 685, 689, 709
Gass, Patrick 544-45, 851
Gauld, George 431
Gautier (or Gaultier) 257
Gay-Lussac, Joseph Louis 652-53
Geddes, James 176-77, 179, 511, 513, 528, 862
Geddy, Dr. John C. 925
Genêt, Edmond Charles 280, 499
Gerard, John 100, 202, 627
Ghinard, ? 652-53
Gibson, James 866
Gibson, Col. John 248
Giguilliat, Dr. Charles 679, 741, 797-98, 925
Gilli, Filippo Salvadore 272
Gilliams, Jacobs 466
Gilmer, Francis Walker 870
Gineni, Caval? 494
Girardin, Louis Hue 608-09, 633
Giseke, Dr. Paul Dietrich 592-94, 596, 599, 661
Gist, Christopher 772
Glover, Dr. Joseph 138, 697-98, 789
Gmelin, Johann Frederick 283, 327, 335, 345, 348, 507, 587-88, 713-14, 720, 722, 754, 810
Gmelin, Johann Georg 287, 395, 434
Godfrey, Thomas 583
Godman, John Davison 271, 751, 766, 771
Godon, Silvanin ..... xxv, 628, 646, 650, 852, 863
Goforth, Dr. William 778, 806
Gomara, Francisco Lopez de 771
Gonzales, Gov. Don Luis de Onís de 251, 253-54
Good, Dr. John Mason 102, 250, 252-54, 360-63, 403, 815, 827, 833
Gookin, Daniel 582
Gouan, Antoine 607, 820
Gough, Dr. John Parker 679, 790, 925
Goulson, ? 131-32
Graeff, Catherine (see also Barton, Catherine) 56-57, 631, 862-63, 936
Grassi, Dr. A. M. 388, 404
Gratiot, Charles 702
Graustein, Jeanette ..... xvi, 521, 534, 537
Gray, Asa ..... xvi, 52, 405, 433-35, 452, 520, 630, 870
Gray, Dr. Henry M. 149, 196, 250, 571, 674-75, 708, 718, 731, 795, 925
Green, Rev. Dr. Ashbel 476, 734-35
Green, Daniel 764
Green, Jacob 459
Greenwald, Isador 179
Greenway, Dr. James 210-12, 268-69, 475, 572, 592-99, 603, 640, 671, 673
Gregg, Dr. Amos Jr. 143, 178, 269, 443, 475-76, 478, 610-11, 647, 722, 925
Gregoire, Henri 823
Gregory, Dr. John 97, 685
Grew, Nehemiah 3
Grier, Richard 62, 174, 925
Griffith, Moses 325
Griffith, Robert E. 148, 422
Griffitts, Samuel Powel 63, 143, 165-66, 168, 170, 190, 208, 213-14, 274-75, 475
Grimes, John 163, 192, 458, 805, 926
Gronovius, Johann Fredrick ..... xxv, 303, 335, 434, 573, 592, 594-96, 598, 603, 617, 624, 626-27, 657, 685
Gross, Dr. Samuel D. ..... xv, 30, 194, 866
Guilding, Rev. Lansdown 93
Guthrie, William 381, 669, 751, 760
Gwynedd, Madog ap Owain 126, 334, 338, 345

H

Haag, William 771
Hakluyt, Richard 443
Halenius, Jonas 433
Hall, Elisha 153, 172
Hall, Frederick 98, 198, 360, 652-53, 667, 828, 851
Hall, James 86, 654
Hall, Dr. Richard Wilmott 146
Haller, Albrecht von 185, 226, 573, 593, 608, 784
Hallowell, A. Irving 128
Hambell, William Jr. 817
Hamilton, Alexander ..... xviii, 19, 309
Hamilton, Andrew 276, 501, 670
Hamilton, James 514
Hamilton, Dr. Thomas 926
Hamilton, William ..... xiii, xxiii, xxiv, xxv, 32, 42, 58, 65, 82, 105, 139, 275-76, 286, 292, 407-08, 410, 435, 447, 467, 481, 484-85, 493, 501-07, 514, 518, 520, 527, 541-42, 544-45, 554, 561, 565, 576-77, 579, 582, 604, 606, 613, 618, 623, 629-30, 634, 719, 723, 783, 787, 794, 810, 858-59, 866
Hamor, Ralph 743
Handy, Dr. Hastings 926
Handy, William 209, 926
Hardaway, Daniel 173, 926
Hare, Robert 138, 448, 464
Hariot, Thomas 262, 523
Harlan, Richard 692, 703, 765, 771, 873
Harney, John M. 640-42
Harper, Francis 335, 570, 692, 714-15
Harris, Levett 393, 846
Harris, Thaddeus Mason 124
Harris, Dr. Tucker 217-18, 269, 450
Harrison, William 529
Hart, Jacob 526
Hartman, Carl 748, 751
Harvey, William 98, 328, 333, 828
Haüy, Réné 653
Haven, Samuel F. 241, 258
Haynesworth, Dr. James 478, 615, 698
Hayward, Dr. George 800, 802, 926
Hazard, Ebenezer 309
Hazard, Samuel 459, 462-65
Hearn, Samuel 108
Heart, Jonathan 123-24, 130, 269
Hebersen, William 201
Heckewelder, John ..... xiii, xviii, 74-75, 168, 177, 181-82, 200, 237-43, 245-49, 264-66, 269, 272, 282, 286, 381, 443, 476, 607, 635, 639, 644, 660, 680, 694, 696, 699, 712, 716-17, 719-21, 724, 745, 747-48, 751, 754-55, 764, 767, 769, 772, 810, 812, 822, 872
Heister, Dr. John P. 856-57
Heller, ? 186
Hendricks, Capt. 583
Henry, Thomas Jr. 318
Herholdt, John 373, 476

Hernandez, Francisco..... 275, 543, 564, 703, 716
Hervas, Lorenzo 272
Hewson, Dr. Thomas C. 115, 478, 689, 866
Heylin, Isaac 478
Higginson, S. (see also Barton, S.) 28, 40
Higginson, Stephen 40
Hildreth, Dr. Samuel Prescott 624, 650-52
Hill, Sir John 844
Hilton, George 501
Hocking, J. Jr. 158
Hodge, Dr. Benjamin C. 926
Hoffman, G. F. 428, 533, 844
Holland, Dr. Nathaniel Littleton 926
Holmes, Dr. Robert 926
Home, Dr. Everard 745, 750
Home, Dr. Frances 82, 86
Hooker, Joseph Dalton 558
Hooker, William 284, 363, 422-23, 509, 517
Hope, Sir Archibald 670
Hope, Dr. John 81-85, 96, 150, 406, 457, 462, 555
Hope, Dr. Robert 82
Hope, Thomas 653, 851
Hopkins, Lemuel 636
Hopkins, Samuel B. 459
Hopkinson, Francis 674
Hopkinson, Joseph 307
Horace 634
Horsfield, Dr. Thomas ..... xiv, 143, 182, 194-95, 275, ... 467, 505, 571, 812
Hosack, Dr. David ..... xvi, xxiii, xxv, 150, 190, ... 201, 217, 229, 232, 402, 414, 417, 478, ... 514, 516-17, 544, 547, 557, 560, 628, ... 630-31, 655, 696, 796, 821, 831-32
Hoskins, Dr. John 196, 844
Houston, Dr. ? 149, 294
Houston, James 757
Howard, Dr. William 927
Hubard, James T. 223, 306
Hubbard, John 652
Hubbart, William 285
Hueve, Dr. 825
Hughes, Griffith 506
Hull, John 405-06, 609
Humboldt, Alexander von ..... xiv, xxiii, xxiv, xxvi, ... 22, 174, 244, 254-57, 357, 414, 431-32, 435, ... 444-48, 467, 497, 547, 561-62, 691, 693, ... 701, 709, 718, 820, 870, 873
Hunt, Robert 164, 190
Hunt, Wilson Price 539
Hunter, Rev. Henry 632-33
Hunter, Dr. John ..... xxi, 61, 79-80, 83, 95, 114, 155, ... 172-75, 313, 321, 373, 457
Hunter, Dr. William 61-62, 80
Hutchins, Thomas 326, 337, 339, 431
Hutchinson, Dr. James 210, 275, 309, 318, 672, 927
Hutchinson, Gov. Thomas 285
Hutton, James 83, 85-86

I – J

Imlay, Gilbert 340-41, 343
Irvin, ? 532-33
Ives, Dr. Eli ..... xiv, 86, 927

Jackson, Gen. Andrew 35, 58, 865
Jackson, Henry 146, 796, 927
Jackson, Dr. Samuel 159, 197, 463, 465, 927
Jacobs, Hannah (see also Rittenhouse, Hannah) 13, 38
Jacobs, Dr. William Stephen 164, 402-03, 458, 828, 926
Jacquin, Nikolaus Joseph von 275
James, Edwin 653, 751
James, T. J. 413, 414, 416
James, Dr. Thomas Chalkley 166, 193, 227-28, 288, 306, 783, 834-36
Jameson, Robert 86, 95-96, 101, 111, 815
Jameson, William 87, 95-96
Janson, Charles William 138, 768
Jefferson, Peter 337
Jefferson, Thomas ..... xii, xiii, xiv, xviii, xxi- xxv, 14, ... 18, 19-22, 29, 31, 33, 80, 96-97, 111, 115, 120, 124-26, 129, 137-38, 148, 155, 162, 164, ... 191, 205, 216, 219, 235, 237, 240, 247-52, ... 255, 260-61, 269, 271-72, 280, 282, 287, ... 291-93, 299-305, 307-09, 313, 316, 343, ... 346, 389-90, 393, 312-13, 322, 337, 339, ... 370, 413-14, 435, 446-48, 456, 462, 478, ... 490, 492-93, 499, 501-02, 537, 541-50, 560, ... 564, 567, 577, 592, 596, 598-601, 603-04, ... 608, 620, 628, 646, 648, 659, 667, 672, ... 678-79, 702-03, 716, 722, 732, 744, 762, ... 764-65, 769-70, 773-75, 777, 779, 787-88, ... 790-91, 796, 807, 810-12, 829, 852, ... 866, 869-73
Jenner, Edward 102-03, 155, 476
Jennings, J. D. 124
Jennings, Samuel ..... xvi, xxii, 163, 273, 330
Johnson, Isaac 731
Johnson, Juliana Elizabeth (neé Zantzinger) 32, 53, 938
Johnson, Samuel ..... vii, 80
Johnson, Thomas 88, 408, 694, 756
Johnson, Sir William 6, 128, 267
Johnston, Dr. James Chew 420-21, 717, 859, 927
Johnston, John Warfield 233
Jones, Calvin 654, 676
Jones, Rev. Hugh 356, 523, 570, 617
Jones, Johannes (John) 274, 844
Jones, William 33
Josslyn, Charles 184, 626, 768, 853, 927
Jussieu, Antoine Laurent de .... 82, 287, 385-86, 390, 441-43, 567, 612, 616, ... 625, 829, 865, 867-68, 870

K

Kagey, Isaac 180-81
Kalm, Peter ..... 63, 121, 126, 262, 269, 326, 374-375, ... 427, 443, 672, 679, 695-96, 737, 741, 763
Kames, Lord (Henry Home) 127
Kampman, Dr. Christian Frederick 822
Keegan, Dr. Thomas Gilbin 619, 927
Keighler, Benjamin 463
Kemp, S. D. 158
Kennedy, John 577
Kerr, Robert 122, 304, 743, 748
Kerwin, Richard 541
Kimmersley, E. 709
Kin, Mathis 604
King, James 190, 927
Kingston, John 233
Kircher, Athanasius 718-19
Kirkland, Rev. Samuel 125

Kirtland, Dr. Jared Potter 927
Kiteley, Joseph 284, 288
Klauber, Laurence 695, 698
Klein, Jacob Theador 662
Knoch, August Wilhelm 677
Knox, Gen. Henry 130, 216
Knox, Dr. John 148, 200, 215-216
Knox, Dr. Thomas 269, 293, 622, 928
Kollock, Dr. Lemuel 170, 189, 209, 215, 476, 615, 628
Kops, Jan 554
Kramsch, Samuel Gottlieb 280-81, 572, 600-01, 603
Krieg, David 356, 474, 570, 608, 617
Krusenstern, Adam Johann von 392, 395-97, 545
Kugler, Dr. Benjamin 928
Kuhn, Dr. Adam 62-64, 82, 97, 143, 145-49, 168, 201, 207-08, 213, 269, 274, 276, 321, 326, 373, 433, 448, 458, 607, 839, 844, 866
Kuhn, Dr. Frederick 14, 24, 57
Kyd, Robert 555

L

Laborde 606
Lacépède, Bernarde Germain Etienne (Compte de) 174, 250, 294, 311, 386-88, 545, 607, 643, 645, 670, 677, 683, 686, 695, 697, 699, 701, 711, 713, 724, 738, 748, 755, 758, 764, 767, 774, 814, 819, 894
Laet, Johannes de 239, 245
Lafitau, Rev. Joseph Française 129
Lafoens, Duke John 709
Lamarck, Jean-Baptiste 683
Lamb, John 182-83
Lambe, William 826
Lambert, Aylmer B. ..... xii, xiv, xxv, 421, 509, 511, 517-18, 520, 548, 827, 837
Lambert, John H. 463
LaMettrie, Julien-Offray 226
Landreth, David 484, 507, 627, 629
Langsdorff, Georg Heinrich von 161, 261, 392, 395-97, 534, 545
Lastri, Marco 290, 402
Latham, Dr. John 312, 327, 335, 681, 761, 726, 731
Latrielle, Pierre 863
Latrobe, Benjamin H. 18, 26, 35, 154, 191-92, 287, 291, 322, 402, 507, 697
Latrobe, Henry S. 254, 928
Lawson, Alexander 388, 426, 432, 445, 668, 703, 832, 862
Lawson, John 74, 327, 612, 696, 716
Lawton, ? 556-59
Leach, William Elford 712, 766, 826-27
Leake, Chauncy D. 233
LeConte, John 363, 501, 520, 628-30, 664, 682, 686, 692-93, 700, 725, 805
Leon, Solomon de 83, 119, 130
Leschenault de la Tour, Jean Baptiste ..... xxiv, 561-62, 613, 629, 845
Leslie, Charles Robert 33, 343-44
Leslie, Eliza 33, 343
Leslie, Robert 33, 343-44
Lesueur, Charles Alexander 75, 378, 466, 561, 649, 793
Lettsom, John Coakley ..... xii, xxii, xxv, 87-88, 90, 98-102, 104-06, 130, 144-45, 155, 188, 198, 209, 216-17, 267, 329, 358-60, 362, 403, 457-58, 613, 620, 625, 685, 709, 826, 849, 851, 867
Lever, Ashton 101, 743
Lewis and Clark ..... xii, xiv, xxiii, xxiv, 304, 307-08, 346, 395, 414, 493, 501, 507, 517, 528, 534, 537, 539, 541-50, 570-71, 577, 606, 617, 626, 646, 702, 735, 761-63, 770, 790, 792, 816, 851, 872-73
Lewis, C. W. 654, 758
Lewis, Meriwether ..... vii, xxiii, xiv, xvii, xxiv, xxv, xxvi, 46, 250-51, 269, 272, 295, 302, 304, 477, 514, 517, 536-37, 541-51, 576-77, 625-26, 646, 654, 665, 678, 702, 757, 762, 764-65, 770, 792, 809-10, 837-38, 866, 868, 871-73, 898
Lewis, Reuben 537
Lichtenstein, Prince 356, 481, 485
Lightfoot, Rev. John 88, 325
Ligon, Richard 144
Lincoln, Dr. Benjamin 928
Lining, Dr. John 207, 350
Linneaus, Carl ..... xxii, 6, 62-63, 76, 82-83, 89, 93, 112, 175-76, 201-02, 242, 270, 276-77, 292, 303, 325, 327-28, 334-35, 343, 345-46, 348, 354, 369, 371, 373, 375, 405-06, 417, 419, 422, 433, 443, 453, 457, 460, 462, 474, 478, 497-99, 503, 541, 550, 567, 570-71, 573, 581, 585, 591-92, 594-96, 598, 600, 603, 606, 609, 611, 617, 626, 631, 634, 636, 661-64, 671, 676, 683-85, 689, 692, 694, 705, 719-20, 722-24, 726, 739, 743-44, 751, 754, 763, 765-67, 770, 789, 792, 802, 807, 811, 838, 865, 867-68
Lisa, Manuel 535-39
Livingston, Cora (see also Barton, Cora) ..... vii, vvi, 18, 864-65, 974, 980, 985
Livingston, Edward 32, 497, 864-65
Livingstone, Robert R. 296
Locke, John 195
Lockhead, William 90-93, 562-63
Logan, George 137, 217
Logan, James 583, 777
Long, Stephen 414, 653
Longinos Martinez, José 564
Lopez, Hipolito Ruiz (see Ruiz and Pavón)
Loskiel, George Henry 236-37, 242-43
Loureiro, João de 202, 401, 431
Lowry, Robert 478
Luther, Martin 234
Lyon, John 412-13, 481-84, 486, 493, 501, 522, 557, 561, 575-76, 578-79, 613, 623
Lyons, James 478, 483

M

MacBride, Dr. James 173, 681-82, 928
MacKay (or McKee) 293
MacKenzie, Alexander 431, 529, 767, 810
Maclure, William ..... xxiv, 86, 119, 137, 170-71, 247, 284, 466, 522, 561, 642, 644, 646-50, 678, 828-29, 848, 891
MacMurray, William 337, 339
MacNab, William 85
MacNeven, Dr. Philip 809, 831
MacPhail, Ian ..... ix, 441
Madison, Dolly 621

Madison, President James ..... xxiii, 18, 309, 530, ... 537-38, 622-23, 744, 779-80, 823, 867
Madison, Dr. James Catesby 191, 447-48, 928
Madison, Bishop James ..... 124, 293, ... 383, 459, 476, 478, 606, 655, 773
Maerter, Franz Joseph 170
Magellan, Jean Hyacinthe de 673-74
Mann, Dr. C. M. 465
Manners, Dr. John 567
Margrave, Georg 275, 346, 716, 722, 726
Margraff, Andreas 173
Marks, John H. 928
Marshall, Humphry ..... 80, 81-82, 100-02, 269, ... 286, 355, 434, 457-58, 493, 501-03, 555, ... 569, 573, 594, 596, 600, 609, 672, 792, 803
Marshall, Dr. Moses 502, 803
Martin, Dr. James 928
Martin, Dr. William 929
Martyn, Peter 771
Martyn, Thomas 281, 404, 413, 630, 636
Mason, Thomas 269
Massie, Dr. Thomas 468, 477, 929
Masson, Francis 759
Mather, Cotton 285, 695, 717
Matthew, William Diller 770-71
Maverick, Samuel 772
Mayo, Dr. Robert 197, 794, 928
Mayweg, J. T. 859, 861
Mazzei, Filippi 820-21
McAlpin, J. 851-52
McArran, John 501
McAtee, William L. 76, 292-94
McCall, Dr. Edwin Leroy 146, 189, 306, 928
McCoig, Malcom 83
McCorkle, Dr. William 43
McGhee, A. M. 655, 775
McGillivray, Alexander 129-30
McGillivray, Duncan 763, 765
McKean, Thomas 14, 32, 117, 166, 314
McKee, James 822
McKenney, Thomas L. 260
McMurtrie, Dr. Henry 818-19, 928
Meade, Dr. William 655, 694
Mease, Dr. James 102, 158, 216, 270, 296, 422, 451, ... 454, 459, 462, 485, 497, 630, 675, 796, 888
Meehan, Thomas ..... xv, 521, 571
Meigs, Charles D. 234
Meigs, Josiah 757, 760
Melsheimer, Frederick Valentine ... 591, 676-78, 778
Mendenhall, John 929
Menninger, Thomas 450-51
Menzies, Archibald 444, 577
Meredith, William T. 929
Meriwether, William Douglas 770
Merriam, Clinton Hart 760, 767
Merrill, George P. 654
Merry, Anthony 22, 646
Merry, Elizabeth 22, 278, 544, 576-77
Mertens, Franz Carl 464, 825, 843
Mettauer, Dr. John Perer 233, 929
Meyer, Frederic Detlief 476, 606, 706
Michaux, André ..... xxii, xxiii, 41, 209, 269, 276, ... 303, 312, 357, 412-14, 420, 428-30, 443, ... 446-47, 482-83, 486-87, 489, 493-94, 496, ... 498-99, 501-02, 504, 507, 518, 524, 551, ... 561, 568-70, 572-75, 591, 604-05, 608, ... 610-14, 616, 626, 628, 631, 673, 686, ... 731, 759, 792, 875
Michaux, François ..... xvii, 57, 390, 404, 419, ... 560-61, 614, 651, 686, 734, 867
Middleton, Dr. Peter 150
Mifflin, Gov. Thomas 216, 309, 344, 448
Milledge, Gov. John 757
Miller, Edward 471, 473-74, 728, 630-31
Miller, John 541
Miller, Philip 84, 413, 504, 604
Miller, Samuel 125, 171, 231, 271, 418, 473-74, 666
Mirbel, Charles Francis Brisseau de 389, 403
Mitchell, Dr. John Stevenson 202, 458-59, 797, 853, 929
Mitchell, Dr. Thomas Duché 929
Mitchill, Samuel Latham ..... 87, 138, 161, ... 194, 216-17, 247-48, 283, 313-14, 318, 417, ... 467, 471, 473-75, 486, 496-97, 551, 572, ... 590, 630, 645, 672, 696, 700, 704-05, 737, ... 757, 760, 763-64, 796
Mittauer, J. P. 782
M'Kinney, Archibald 463
M'Laughlin, William F. 413
M'Mahon, Bernard ..... xxiii, xxvi, ... 305, 420, 440, 501, 505, 514-16, ... 528, 544-45, 579, 581, 606, 623, 882
Mociño, José Mariano 564
Molina, Giovanni Ignazio 275, 506, 612-13
Monro, Alexander 80, 82, 91, 306
Monroe, James 29, 823
Monroe, John 22
Montgomery, Dr. Alexander 640
Montgomery, Janet Livingston 864
Montgomery, Gen. Richard 864
Moore, Dr. James 269
Moore, Dr. John 43, 929
Morgan, Col. George 122-23, 267, 274
Morgan, Dr. John ..... xxi, 30, 61, 63, 79-81, ... 95, 122-23, 145, 157, 204-05, 207, 458
Morgan, Margaret (neé Rittenhouse) 12, 938
Morgan, Mary (neé Rittenhouse) 12, 938
Morison, Robert 144, 570, 594, 598, 743
Morris, Dr. Charles 198-99, 269, 406, 929
Morris, Robert 137, 847
Morris, William Thomas 789, 853-58, 929
Morse, Jedediah 161, 340-41, 343, 381, 431, 580, 583
Morse, Samuel P. 582
Mortimer, Rev. Benjamin 243
Morton, Conrad 790
Morton, Dr. Samuel George 113-14, 772, 832
Moss, Henry 127-28, 798
Moyse, Dr. 91, 143
Muhlenberg, Dr. Frederic Augustus 470, 929
Muhlenberg, Rev. Henry ..... 22, 32-33, 43, 109, 120, ... 160-62, 212, 246, 278, 287, 313, 357, ... 386, 390, 446-47, 481-82, 484-86, 490, ... 492-93, 496, 501, 505, 517, 524, 527, 544, ... 557, 564, 569-80, 586, 590-91, 601, 603, 605, ... 607, 623, 626-28, 630, 636, 677, 681, 770, ... 782, 796, 803-04, 808, 811, 816-17, 825, ... 829, 838, 841, 849, 866, 868-70, 887, 908
Murdock, Dr. Jonathan 929
Murray, Johann Andreas 87, 109, 174, 581, 593, 792
Musser, J. 43, 576, 643

Mussey, Dr. Reuben Dimond 463, 929
Myers, George S. 497

N

Nalle, Professor 178
Napier, Sir Charles James 620
Napier, Sir William Francis Patrick 620
Naronha, Fernandino 431
Nash, Alanson 699
Neblett, Stephen Jr. 192
Neef, Joseph 648-49
Neville, Gen. John 178, 293
Neville, Joseph 70
Neville, Presley 710
Nice, William George 930
Nichols, Francis 290
Nicholson, John 847-48
Nicholson, William 362, 471, 475, 909
Nisbet, Dr. Charles 164, 635
Norcom, James 454-55, 654, 841
Nuttall, Thomas ..... vii, xii, xiii, xiv, xvi, xxiv, xxv, ... 179, 260-61, 395-96, 405-06, 414, 420-21, ... 423, 428, 434, 516-19, 521-40, 542, 549, ... 567, 570, 575, 578, 612, 615, 618, 625-26, ... 655, 723-24, 741, 792, 794, 804, 809, 827, ... 836-38, 870, 1012

O

O'Donnell, Capt. John 309
Oemler, Augustus Gottlieb 682, 578
Oliver, Dr. Daniel 196, 930
Oppel, Nicolaus 243, 683
Ord, George ....xiv, xxiv, 360-61, 445, 466, 497, 603, ... 670, 714, 723, 728, 734, 737-38, 740-42, ... 751, 761-62, 873
Ormrod, John 161
Osbeck, Peter 443
Osborn, Henry Fairfield 772
Osler, Sir William 150
Owen, Robert 649

P

Pace, Antonio 434
Packard, Alpheus Spring 772
Packard, Asa 736-37
Paine, Thomas 13, 108, 118-19, 159
Paley, William 102
Pallas, Peter Simon ..... 114, 235, 244, 261, 272, 317, ... 325, 347, 370, 378, 393, 396, 403, 478, ... 565, 662, 754, 762, 764
Palmer, David 474, 478
Paoletti 676
Parke, Thomas 80-81, 141, 143, 149, 274, 448, 458, 503, 607
Parkinson, John 408
Parkinson, Sydney 110, 326
Parrish, Dr. Joseph 146, 181, 930
Parrish, William J. 124
Parsons, Gen. Samuel H. 122
Paschall, A. 270
Patterson, Dr. Robert Maskell ..... xvii, 148, 193, 291, ... 301-02, 307-09, 313, 448, 754, ... 816-17, 839, 866, 930
Patterson, Samuel 364-367
Pavón, José (see Ruiz and Pavón)
Peale, Charles Willson ..... xii, xvii, xxii, xxiv, 13, 15, ... 23, 101, 120, 137, 139, 148, 206, 294, 302, ... 304, 307-13, 343, 386, 391, 396, 401, 414, ... 442, 445, 447-48, 460, 462, 466, 477, 522, ... 541-43, 545, 548, 550, 586, 607, 646, 653, ... 676, 690, 693-95, 700-04, 710, 722, 731-32, 738, 744, 750, 752, 758, 760-63, 765-68, 770, ... 773, 775, 787-88, 873
Peale, Ramsay 466
Peale, Rembrandt ..... xvii, 302, 312-13, 768, 775-76, 863
Peale, Rubens ..... 312-13, 442, 466, 650, 667, ... 695, 699, 733, 737, 930
Peale, Titian 466, 702, 762
Pearson, Dr. George 102-03, 607, 644
Peck, Dr. William D. ..... xiii, xxv, 40, 281, 286, 313, 345, 447, 463, 573, 579, 585-90, 652, 669-70, . 673, 676-77, 680, 710, 745, 753-54, 802, 867
Pemberton, John 130-32, 134, 144, 273-74
Pendergrast, Dr. Garrett Elliott 459, 490-91, 930
Penington, Benjamin 938
Penington, Edward Sr. 162, 478, 825, 938
Penington, Edward Jr. ..... xv, 56, 164-65, 852, 861-62, 871, 938
Penington, Isaac 162, 938
Penington, Isaac (younger) 938
Penington, Dr. John 98-99, 165, 227-29, 231, 938
Penington, Sarah (neé Shoemaker) 163, 938
Penn, John ..... xii, 6
Penn, Lady Juliana 4-6, 12, 18, 37, 56, 162, 337
Penn, Thomas 1, 4-6, 9, 17, 37, 337, 642
Penn, William 131, 162
Pennant, Thomas ..... 61, 74-75, 77, 82, 97, 120, 130, 147, 207, 275, 282, 300, 325-53, 364, 380-81, ... 403, 443, 585, 603, 661-62, 664, 672, 696, ... 703-04, 710, 713-16, 720-22, 724, 731, ... 743-44, 751-52, 756, 760, 762-63, 767-71, ... 809, 1009
Pennell, Francis ..... vii, xvi, 540, 571, 843
Pereira, Hipólito José Da Costa .. xxii, xxiii, 286, 505
Perkins, Dr. Cyrus 193, 415-16
Pernetty, Antoine Joseph 107, 431-32
Perry, Commodore O. H. 30
Persoon, Christian Hendrik .... 389-90, 428, 464, 496, 571, 576-77, 626-27, ... 631, 811-12, 816-17, 819, 824, 908
Peters, Rev. Richard 3-5, 17, 21, 228, 299, 449
Peters, Judge Richard 296, 366, 442, 451-54, 456, 597, 617, 762
Pettigrew, Thomas Joseph 826
Petty, William, Earl of Shelborne 313, 316
Pfaff, Christoph Heinrich 146
Pfeiffer, Dr. George 202, 930
Physick, Philip Syng ..... xi, 26, 79, 81, 83-84, 101, ... 159, 168, 193, 213, 265, 321, 448, 472, ... 490, 616, 779, 806, 848, 866
Pickering, Charles 521, 873
Pickering, Dr. Samuel W. 174-75, 930
Pictet, Marc-Auguste 447, 649, 820
Picton, Rev. Thomas 32, 164
Pike, Zebulon 443
Pinckney, Charles Cotesworth 549
Pinkerton, John 77, 431-32, 467, 615, 628
Pinzón, Vincente Yadez 743
Piso, Willem 275, 716, 726

Pitcairn, Dr. William 83
Plato ..... xviii, 16, 662
Playfair, Dr. John 85-86, 111, 314, 364, 815, 828
Plée, Auguste 414
Pliny the Elder 335, 363, 454, 634, 736
Ploucquet, Wilhelm Gottfried 826
Plukenet, Leonard ..... 275, 356-57, 570, 573, 578, ... 594, 606, 611, 617, 627
Plumier, Charles 275
Poiteau, Pierre Antoine 414, 561
Pole, Thomas 115
Pond, Peter 346
Pope, Dr. John Hunter 164, 930
Porter, Col. Andrew 69-71, 73, 75, 121, 138, 216
Post, Christian Frederick 239
Potocki, Count Jan 272
Potter, Nathaniel 471, 615
Powel, Samuel 131
Powell, John Wesley 241
Preble, C. D. R. Edward 42-43
Prescott, John Leonard 655, 731
Prescott, Gov. Robert 760
Preston, Samuel 124, 151-52, 621, 775
Price, Dr. Samuel 119
Price, Dr. Thomas Dandridge 406, 479
Priestley, Dr. Joseph ..... xxii, xxiii, xxiv, 38, 48, 61, 97, ... 100, 124, 134, 151, 171, 188, 235, 270, 282, ... 290, 313-23, 362, 445, 459, 501, 644-45, ... 673-74, 700, 709, 728, 737, 779, 817, 832, ... 840, 850-51
Pringle, Sir Joseph 175, 231
Prioleau, Dr. Philip Gendron 931
Prioleau, Dr. Thomas G. 164, 690, 693, 931
Purchas, Samuel 679
Pursh, Frederick ..... vii, viii, xii-xiv, xvi, xxii-xxvi, ... 46-47, 170, 260, 269, 283, 287, 304, 356, ... 414, 421, 434, 463, 484-86, 491-93, 496, ... 501-23, 525-28, 540, 542-45, 547-48, 554, . 561, 570-71, 573, 578, 585, 592, 604-07, 609, ... 612-13, 615, 617, 620, 625-27, 630, 723-24, ... 759, 792, 804, 809-10, 816, 827, 837-38, ... 856, 859, 862, 873
Putnam, Gen. Rufus 122, 125
Pyrolaeus, John Christopher 242-43

R

Raffeneau-Delile, Alire ..... xxiv, 560-62, 636, 686
Rafinesque, Constantine Samuel ....xiii, xxv, 56, 260, 444, 474, 485, 492-98, 520, ... 542, 551, 573-74, 590, 605, 608, 664, 684, ... 723, 760, 762, 791, 796, 807, 841, 865, 873
Ralston, Robert 192-93
Ramírez, Alejandro 252-53, 399, 562
Ramsay, Dr. David ..... 154, 161, 231, 233, 292, 296, ... 309, 381, 471, 481, 483, 557, 628
Randolph, Thomas Jefferson 138-39, 190, 650, 787-88, 931
Randolph, Thomas Mann ..... 35, 96-97, 601, 291-93, ... 624-26, 723, 744, 774-75, 811, 824
Ranstead, Caleb 452
Rawle, William 866
Ray, John 59, 82, 325, 328, 570, 594-95, 598, 662-63
Raynal, Abbé Guillaume Thomas François 61, 108
Redouté, Pierre Joseph and Henri Joseph 412, 419, 429, 517
Redman, Dr. John 204, 208, 274, 319, 472, 844
Reed, Gen. Joseph 10
Reed, Joseph Jr. 850
Rees, Abraham 734-35
Reeve, Dr. Henry 739-40
Reichel, Carl Gotthold 264, 280, 601
Reidenauer, George 155
Reider, Alexander 607, 726
Reimarus, Johann Albrecht 383-84, 403, 749-50, 777, 897
Renshaw, Benjamin 823-24
Renshaw, William 823-24, 859
Reynolds, Dr. James 227, 448-49
Rhea, Mary Smith 18
Rhoads, Samuel 448, 669
Rich, Obadiah 591-92
Richard, Claude 499
Richard, Louis 419
Richardson, Edgar P. 23, 293, 343
Richer, Jean 709
Richerand, Balthazar 185
Riddell, John J. 58, 161
Ridgely, Dr. Frederick 805
Ridgway, Susan (see also Barton, Susan) 18
Riley, Capt. James 866
Rio, Don Andreas Manuel del 397-99
Rio, Antonio del 250-52, 258, 260
Rittenhouse, Andrew 12, 938
Rittenhouse, Benjamin 12
Rittenhouse, David ..... 1, 5, 10-17, 19-22, ... 44, 59-60, 68-71, 73, 77, 79, 118, 120, 129, ... 137, 162-63, 166, 207, 228, 274, 288, 291, ... 299, 301, 303, 307, 309, 313-14, 316, 337, .. 344, 348, 443, 449, 534, 568, 631, 640, 642, .. 644, 672, 693, 709, 713, 715, 744, 747, 780, ... 863-64, 938, 979
Rittenhouse, Eleanor (neé Colston) 5, 13, 44
Rittenhouse, Elizabeth (see also Sergeant) 12, 14, 20-21, 29, 70, 565, 939
Rittenhouse, Elizabeth (neé Williams) 11-12, 15
Rittenhouse, Hannah (neé Jacobs) 13, 14, 69
Rittenhouse, Jonathon 12
Rittenhouse, Mathias 11-12, 14, 162, 938
Rittenhouse, Nicholas Claus 11, 931
Rittenhouse, William (neé Rittinghuysen) 11-12, 638
Rittenhouse, William David 11
Rittinghuysen, Adrian 17
Robbins, Dr. Edward Hutchinson 931
Robertson, Dr. Felix Randolph ..... xxiv, 50, ... 478, 483, 667, 708, 717, 724, 789, 931
Robertson, James 478
Robertson, Dr. William ..... 95, 108, 112, 126, 236, ... 251, 254, 290, 334-35, 354, 438, 659, 771
Robinson, Dr. C. B. 619
Robinson, James Sr. 554
Rodgers, Dr. R. B. 165, 831, 834-36
Roebuck, Dr. Jarvis 783, 794, 844, 931
Rogers, Dr. Patrick Kerr 192, 196, 279, 406, 478, 858-59, 931
Rogers, William Barton 858
Rohr, Julius von 127, 264, 269, 273, 278-79, 369, 376, 505, 684
Romans, Bernard 269, 431, 450
Roscoe, William 22, 204, 364, 483, 521, 549
Ross, Andrew 208, 215, 319
Roule, Louis 633

Roume, Philippe-Rose 748-49
Rousseau, Dr. John Baptiste Clément 931
Rousseau, Jean-Jacques 632, 636
Royer-Collardi, Athanase 384
Roxas (also Rojas) 657
Roxburgh, William 275, 418, 433, 462, 505, 555-59, 748
Ruiz, Hipolito (see Ruiz and Pavón)
Ruiz and Pavón 87, 110
Rumsey, James 344-45, 355, 652
Rush, Benjamin ..... xii, xxv, 13-14, 26, 30, 51, 61-62, 68, 79-80, 82, 85, 89-95, 98-103, 125, 127-28, 137-38, 143, 145-46, 155, 157-59, 162, 165-66, 169, 171, 175-76, 179, 189, 190-91, 193, 195-96, 198-200, 203-34, 269, 274, 287, 291, 299, 301, 305, 307, 313, 315, 318-21, 323, 344, 346, 350, 402, 433-34, 448, 450, 458, 468, 470-72, 475, 477, 493, 541, 547, 553, 563, 572, 601, 616, 618, 620, 625, 628, 679, 779, 780-84, 788, 796, 798-80, 803, 806-07, 812, 816, 841-44, 848, 864, 875
Rush, Dr. James 26, 103, 209, 228-29, 931
Rush, Dr. John 143, 215, 234, 475, 931
Rush, William 15
Russell, Dr. Thomas 219-20, 931
Rutherford, Dr. Daniel 84-85

S

Sacajawea 548
Safold, Reuben 185
Saint-Hilaire, Etienne Geoffroy 695, 731, 765
Saint-Memin, Charles B. J. F. ..... xvi, xvii, 26
Saint-Pierre, Jacques Henri Bernardin de 632-36, 665, 670, 680, 720, 726-27
Salisbury, Richard Anthony 276-78, 362-63, 444, 492, 565, 567-68, 614
Salvin, Osbert ..... xviii, 729
Sandifort (physician) 83
Sansevé, Jaime 564
Sargent, Winthrop 124, 130, 152, 269, 286, 640, 776
Sarrazin, Michel 275
Saunders 269
Savage, Edward 763-64, 861
Say, Benjamin 583
Say, Thomas 466, 649, 664, 673, 675, 751, 772
Scandella, Dr. J. B. 171
Schaffner 722
Schley, George 828
Schneider, Johann Christian 392
Schneider, John Gottlieb 613, 690
Schoepf, Johann David ..... xii, 75, 169-70, 276, 571, 592, 626, 704-06
Schott, George S. 463
Schrader, H. A. 378, 571
Schreber, Johann Christian Daniel von 169, 377, 571, 600, 769-70, 808
Schultz, Dr. Benjamin 307, 449, 931
Scollay, Dr. Samuel 932
Scopoli, Joannes Antonio 560
Scott, John C. 183-84
Scott, Sir Walter 79, 80
Scott, Dr. William Franklin 932
Scull, William 337
Seip, Dr. Frederic 793-94, 932
Selby, Dr. William F. 932
Selkirk, Earl Thomas 92, 366, 520
Semmes, Dr. Thomas 149, 291, 795, 886, 932
Senter, Dr. Isaac 215-16
Senter, Nathaniel Greene M. 617-18
Sergeant, Elizabeth "Betsy" (neé Rittenhouse) 14-15, 20-21, 29, 565, 939
Sergeant, David 939
Sergeant, Esther R. (see also Barton, Esther R.) 14, 29, 31, 939
Sergeant, Frances 939
Sergeant, John Dickinson 14, 20-22
Serra, Jose Francisco Corrêa da ..... xiv, xxv, 112, 119-20, 133, 164, 273, 307, 547, 612, 625, 627, 630, 808, 816, 829, 838, 852, 865-69
Sessé y Lacasta, Don Martin de 564
Sewell, Thomas 175, 201, 932
Seybert, Dr. Adam 27, 307, 319, 464, 542, 614, 646, 657, 816, 853, 855, 858, 862
Seymour, Joseph H. 414, 425-27
Seymour, Samuel 414, 476
Shallers, François 414
Shattuck, Dr. George Cheyne 479, 613, 652, 667, 796-97, 801-02, 932
Shaw, Dr. George 758-60, 765
Shecut, John Linnaeus Edward Whitridge 628
Shepard, William 6, 521
Shepherd, John 527
Shippen, Edward 1, 79, 101, 114-15, 118, 320
Shippen, Joseph Galloway 463
Shippen, Dr. William ..... xii, xvi, xxi, 61-62, 64, 68, 79, 81, 101, 114-15, 118, 137, 143-44, 150, 166, 174, 189, 203-04, 207, 225, 228, 231, 273-74, 305, 320, 458, 604, 614, 618, 779, 844-48, 850, 866
Shoemaker, Annie (neé Rittenhouse) 12, 939
Short, Dr. Charles Wilkins 197, 306, 470, 524, 629, 783, 805, 809, 869, 778, 932
Shryock, Richard 234, 571
Sibthorp, John 87, 103, 361, 378
Siebold, Philip Franz 433
Sieveking, Herr 384, 749
Silliman, Dr. Benjamin ..... xiii, xxiii, 56, 66, 137-38, 220, 294, 313, 320, 471, 497, 520, 652-53, 657, 673, 699, 932
Silverberg, Robert 124
Sinitière, Pierre Eugene du 120, 308
Simmonds, Thomas William 521
Simon, Jean Jacques 633
Simpson, George Gaylord 767, 773
Simpson, M. F. 711-12
Sloane, Sir Hans 275, 794
Smellie, William 76, 83, 102, 290, 365, 406, 741, 809
Smith, Dr. Edward Darrell 639, 789-90, 932
Smith, Elihu 471
Smith, Dr. James Edward 82-84, 86, 96, 119-20, 133, 144, 149, 168, 179-80, 273, 360-61, 363, 403, 422, 457, 560, 568, 571, 575-76, 632, 681-82, 685, 730, 802, 821, 829, 867, 870
Smith, Capt. John 179, 242, 262, 284-85, 589
Smith, John R. 225, 831-36, 850-51, 864
Smith, Dr. Nathan 193
Smith, Robert 131
Smith, Samuel Blair 459, 463
Smith, Dr. Samuel Stanhope 90-92, 107-08, 127-29, 175, 271
Smith, Thomas 822

Smith, Dr. Thomas Peters 171, 645-46
Smith, Rev. Dr. William 3-5, 8-9, 12-14, 21, 60, 118, 165, 194, 228, 285, 299, 307, 808
Snowden, Isaac 14
Solander, Daniel 62, 108, 110, 358, 373, 431
Sömmering, Samuel Thomas 825
Spafford, Horatio Gates 796, 860
Spalding, Lyman 307, 616-17, 846
Sparrman, Dr. Anders 108, 276, 354, 371-73, 571, 813, 846
Spencer, Dr. Oliver Hatfield 933
Spengler, John 477
Sprengel, Christian 423
Squier, E. G. 113
Staughton, Dr. William 232
Steam, William T. 447
Stearns, Samuel 171
Steinhauer, Henry 778
Steller, George 443
Steptoe, William 64-65
Sterling, Kier B. 77, 346, 703, 751, 770
Stevens, Dr. Alexander 620
Stevens, Edward 197, 402
Stevens, James W. 477
Stevenson, Dr. Cosmo Gordon 32, 155-56, 158, 177, 196, 933
Stevenson, George 531, 536
Stewart, Charles 87, 710-11
Stiles, Ezra 122-23, 125
Stimson, William 375
Stockton, Richard 208
Stone, Robert H. 933
Stork, Dr. William 478
Story, Enoch 104-05, 110
Strachey, William 125, 743
Stratton, Capt. 599
Stuart, Gilbert 23, 614
Stuart, Dr. Josephus Bradner 176, 796, 933
Stuart, Samuel 463
Sully, Thomas 23
Sutcliff, Abraham 100
Sutherland, James 86
Swammerdam, Jan 709
Swartz, Olaf 375-79, 403, 419, 424, 444, 571, 608, 613, 813-14, 846
Sydenham, Thomas 186, 200, 206, 211, 231

T

Targioni-Tozzetti, Ottaviano 559-60
Tarleton, John 933
Tate, Mitchell 450, 859
Tatham, William 284
Temple, Sir William 200
Tennent, Rev. Gilbert 4
Thacher, Dr. James 184
Thevet, André 108
Thomas, Dr. David 571
Thomas, Dr. George G. 196, 406, 933
Thomas, Isaiah 815
Thompson, Dr. Hedge 933
Thomson, Capt. John 740-41
Thornbury, Polly 9, 11, 17, 33, 37, 60, 150
Thornton, Dr. George Alexander 933
Thornton, James 131
Thornton, John A. 148, 667
Thornton, Philip 459
Thornton, Dr. William 18, 27, 83, 101, 135, 209, 289, 360, 445, 448, 639, 802
Thouin, André 414, 633, 774, 819
Thunberg, Carl Peter 63, 97, 112, 276, 282, 369-71, 373, 376, 386, 403, 433-34, 556, 752, 754
Tidball, T. 53, 293
Tiebout, Cornelius 424, 427, 668-69, 687
Tilesius, Wilhelm Gottfied 392-95, 404, 621, 777, 824, 846
Tilghman, Edward 809
Tilghman, Justice William 307, 465, 866
Tilloch, Alexander 252-53, 258, 362, 387, 399, 471, 475, 739, 833, 836
Tilton, William 121, 126
Tongue, Dr. James 196, 933
Torrey, John 183, 406, 521, 570, 630, 655
Tournefort, Joseph Pitton de 82, 84, 144
Towles, Dr. Thomas 793-94
Townsend, John Kirk 761
Trail, Dr. 740
Tralles, Alexander of 186, 629, 806
Trandescant, John 408
Trenchard, Edward C. 414
Trenchard, James 76, 414
Trout, George Washington 422
Trumbull, John ..... xviii, 15
Tucker, Aaron B. 464
Tucker, George 293
Tucker, Dr. Samuel 606, 933
Tuckerman, Edward 511, 520, 548
Turner, Dawson 378, 577
Turner, George 761-62
Turpin, Pierre Jean François ..... viii, xxiii, 158, 195, 378, 402, 414, 419, 429, 517, 561, 603-05, 666, 708, 778, 807
Tychsen, Thomas Christian 383
Tyson, Dr. Edward 697, 743

U – V

Ulloa, Francisco de 431

Vahl, Martin 606
Valentin, Dr. Louis 155, 171, 177, 225, 384, 391, 404, 591, 654
Valli, Dr. Eusebio 399
van Braam, André Everard 393, 395
van der Schot[t], Adrian Richard 294, 356, 485, 573-74
van der Wynperse (physician) 83
van Vleck, Jacob 265-67, 517, 746
Vater, Johann S. 244, 272, 404
Vaughan, Benjamin 300
Vaughan, John ..... xviii, xxvi, 39, 57, 143, 219, 288, 292, 299-300, 305, 313-14, 317, 322, 344, 357, 401-02, 414, 418, 444-45, 448, 490, 492, 505, 538, 542, 554, 614, 646, 654, 666, 702, 709, 774, 806, 817, 850, 866-67, 873, 882
Vaughan, Samuel 594, 596
Vaughan, William 22, 300, 313, 357
Vaunxine, James 849-50
Vauquelin, Louis Nicholas 391-92
Vaux, Roberts 463
Vega, Garcilasso de la 254-58, 270, 282
Venegas, Miguel 537, 542, 764
Ventenat, Etienne Pierre 378, 412, 827

Vernon, William 356, 474, 570, 617
von Carlson, Gustavus 310
von Reck, Philip 486, 693
von Rohr, Julius 127, 264, 269, 273, 278-79, 369, 376, 505, 684

W

Wafer, Lionel 107, 336, 338
Wakefield, Priscilla 636
Waldheim, Gotthoff Fischer von 392-94, 404, 679, 846, 878
Walker, Dr. James 176
Walker, Dr. John Munford ..... 84, 86-88, 90, 93, 95, 97, 101, 111, 117, ... 175-76, 371, 458, 599, 694, 710, 756
Walker, Martha (see also Barton, Martha) 11, 55
Walker, Capt. R. W. 55
Walker, Richard 292-94, 371, 721
Wallace, Dr. James Westwood 99, 199, 229, 278, 934
Walmsley, Dr. Thomas 458-59, 474, 559-60, 606, 608, 790, 934
Walsh, Robert 869-70
Walter, Thomas .... 256, 420, 424, 426, 487-89, 506, ... 575, 579, 591, 594, 609, 613, 626, 792, 810
Walter, William Mason 675-76
Wansey, Henry 143, 673, 692-93
Warden, David Bailie 386, 389, 442, 444, 496, 653-54, 762, 867
Warfield, John 782
Warner, Ferdinand 200
Washington, George .... xii, xxii, 4, 10, 18-19, 42, 61, .. 70, 114-15, 117, 125, 131, 147, 162, 203-04, ... 231, 237, 280-82, 286-87, 299, 302, 309, ... 314, 344, 384, 499, 807, 848-49
Washington, Werner 45-46
Waterhouse, Benjamin 138, 155-56, 269, 419, 457, 568, 620, 625, 806
Waterhouse, Dr. John Fothergill 465, 470, 866, 934
Waters, David Rittenhouse 14
Waters, Esther "Hetty" (neé Rittenhouse) 14-16, 31, 288, 565, 863, 939
Waters, Nicholas Baker 14
Watkins, John 295, 764-65
Watt, James 86, 314
Webster, Noah 122, 199-200, 285
Wedgewood, Josiah 314
Wegener, Alfred 240
Weikard, Melchoir Adam 851
Weir, Alexander 86, 88, 101, 710
Weld, Isaac 432
Werner, Johann 87, 95
West, Benjamin 118, 131, 149, 231, 308, 859
West, G. William 118-19
Whately, Thomas 300
Wheelock, Rev. Eleazar 6
White, Benjamin 326, 334-36, 338, 340-43, 347, 349, 351-52
White, Elizabeth W. 37
White, Esther W. (Hetty) 37, 43-44, 54, 70, 150, 939
White, Gilbert ... 284, 326, 664-65, 737, 777, 830-31
White, John 361, 523, 571
White, Joshua S. 474
White, Juliana Susanna (neé Barton) ..... 9-10, 32-34, ... 37-38, 40, 54, 150, 292, 832, 862, 939
White, Judge J. M. 9, 37-38, 54, 292, 832
White, Thomas 37
White, Rev. William 137, 207, 226, 274, 299, 309, 832
Whitefield, Rev. George 4, 231
Whitlow, Charles 630
Whytt, Dr. Robert 168, 207
Wightman, William 89
Wilcox, George 178, 687-88, 701, 708-09
Wilkinson, Gen. James 543, 702
Willard, Joseph 122, 302, 845
Willdenow, Carl Ludwig ..... 291, 378-79, 419, 465, ... 562, 571, 573, 575, 627, 802, 808, 838
Williams, Jonathan 132, 569, 680, 817
Williams, Samuel 736
Williamson, George 153, 178, 477, 616
Williamson, Dr. Hugh 337, 339, 606, 696, 709
Willing, Thomas 14
Willis, John 319
Willughby, Francis 325, 328, 718-21, 726
Wilson, Alexander ..... xiv, xxii, xxiv, xxv, 41, 66, 75, .. 269, 432, 467, 476, 493, 548, 601, 670, 682, ... 698-99, 714, 718, 722-23, 726, 728-29, ... 731-38, 740-42, 762, 796, 810, ... 841, 859, 861, 873
Wilson, Dr. Daniel 934
Wilson, E. H. 520
Wilson, George 189, 934
Wilson, Dr. Job 141, 479
Wilson, John 96
Wilson, Joseph Nicholas 96
Wilson, Dr. Matthew 269
Wilson, Samuel 96
Windsor, John 521
Winthrop, Gov. John 207
Wishart, James 934
Wissler, Clark 120, 244
Wistar, Dr. Caspar ... xiii, xxiv, 68, 79-80, 89-90, 138, ... 143, 145-46, 149, 159, 188-90, 195, 204, ... 208-09, 216, 218, 228, 249, 272, 275, ... 291, 301-02, 304-09, 312-13, 319, 321, ... 393-94, 408, 417, 445-49, 463-64, 490, .. 522, 541, 547, 607, 614, 672, 691, 702, 767, ... 769, 773, 783, 787, 796, 803, 805-06, ... 816-17, 830-32, 834, 836, 838-39, 842, ... 848, 852, 854, 866-67
Wistar, Charles J. 463-64
Withering, William 133, 273, 314
Witherspoon, Rev. Dr. John 234
Woodhouse, Dr. James ..... xxii, 159-60, 166, 175, 195, 222-23, 225-28, 290, 317-21, 426, 448, 464, 467-70, 475, 553, ... 608-09, 618, 646, 657, 806, 858, 866, 934
Woodward, Justice Augustus B. 85, 179, 260-61, 538
Woollett, William 10, 42
Wootton, John 458
Wright, James 772-73
Wyman, Jeffries 289

Y

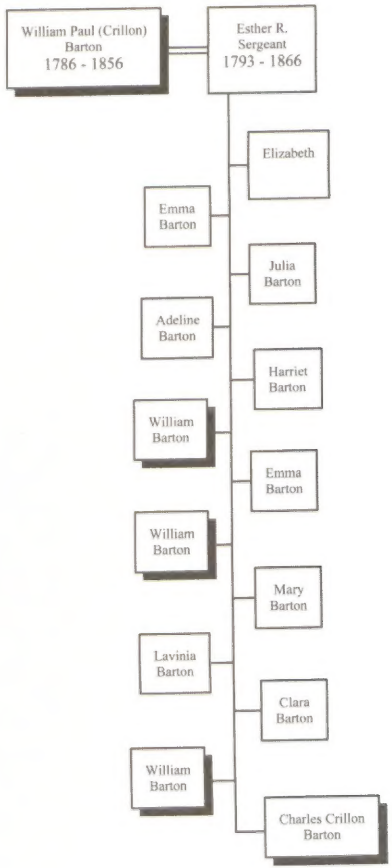
Young, Dr. John B. 476
Young, Dr. John Richardson ..... xiv, 196-97, 402, 458-59, 795, 797, 934

Young, Dr. Samuel 196, 795
Young, William ..... xii, 115

Z

Zane, Sarah 142, 144, 571
Zantzinger, Caroline Amelia I 32, 939
Zantzinger, Caroline Amelia II 32-33, 939
Zantzinger, Caroline Catherine 33, 939
Zantzinger, Esther (neé Barton) 30-34, 38, 53, 117, 571, 811, 939
Zantzinger, Esther Maria 31, 939
Zantzinger, Esther Sophia 32, 939
Zantzinger, Harriet Ann 32, 939
Zantzinger, Harriet Rennette 32-34, 37, 939
Zantzinger, Henry David 32, 58, 859, 939
Zantzinger, Henry Richard 32, 940
Zantzinger, John Paul 31, 33, 940
Zantzinger, Mary 32, 940
Zantzinger, Paul 1, 9-10, 17, 20, 23, 27, 32-34, 37-38, 44-45, 47, 51, 54, 57, 59, 287, 860, 940
Zantzinger, Richard Augustus 33, 34, 940
Zantzinger, Thomas Barton 23, 31, 859, 861, 863, 940
Zantzinger, William Paul 32, 940
Zeisberger, Rev. David 177, 182, 237-41, 248, 272, 280, 282-83, 660, 872
Zimmermann, Eberhard August Wilhelm von 162, 379-82, 403, 620, 660, 683, 699, 753, 763, 765
Zuccarini, Joseph Gerhard 433

Descendants of William Paul (Crillon) Barton



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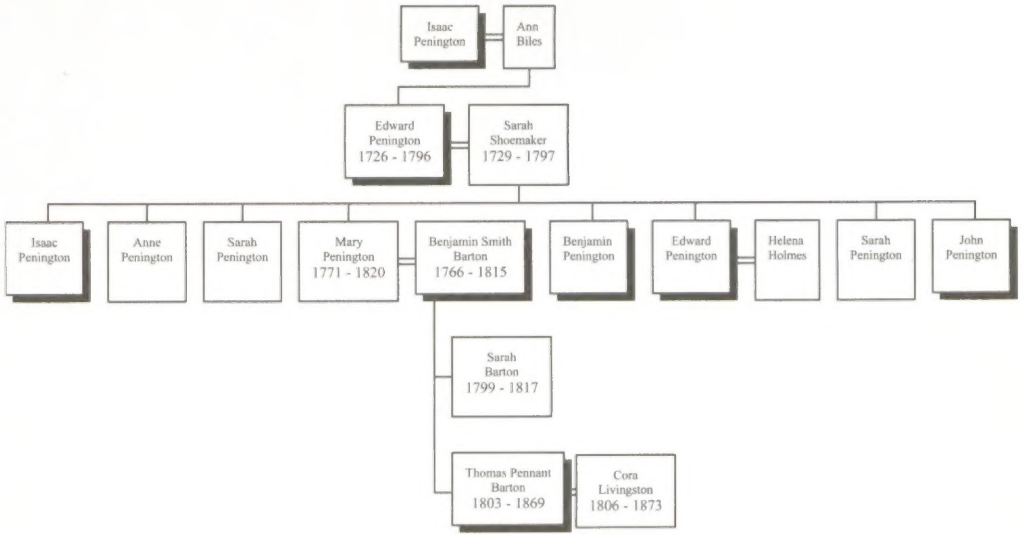
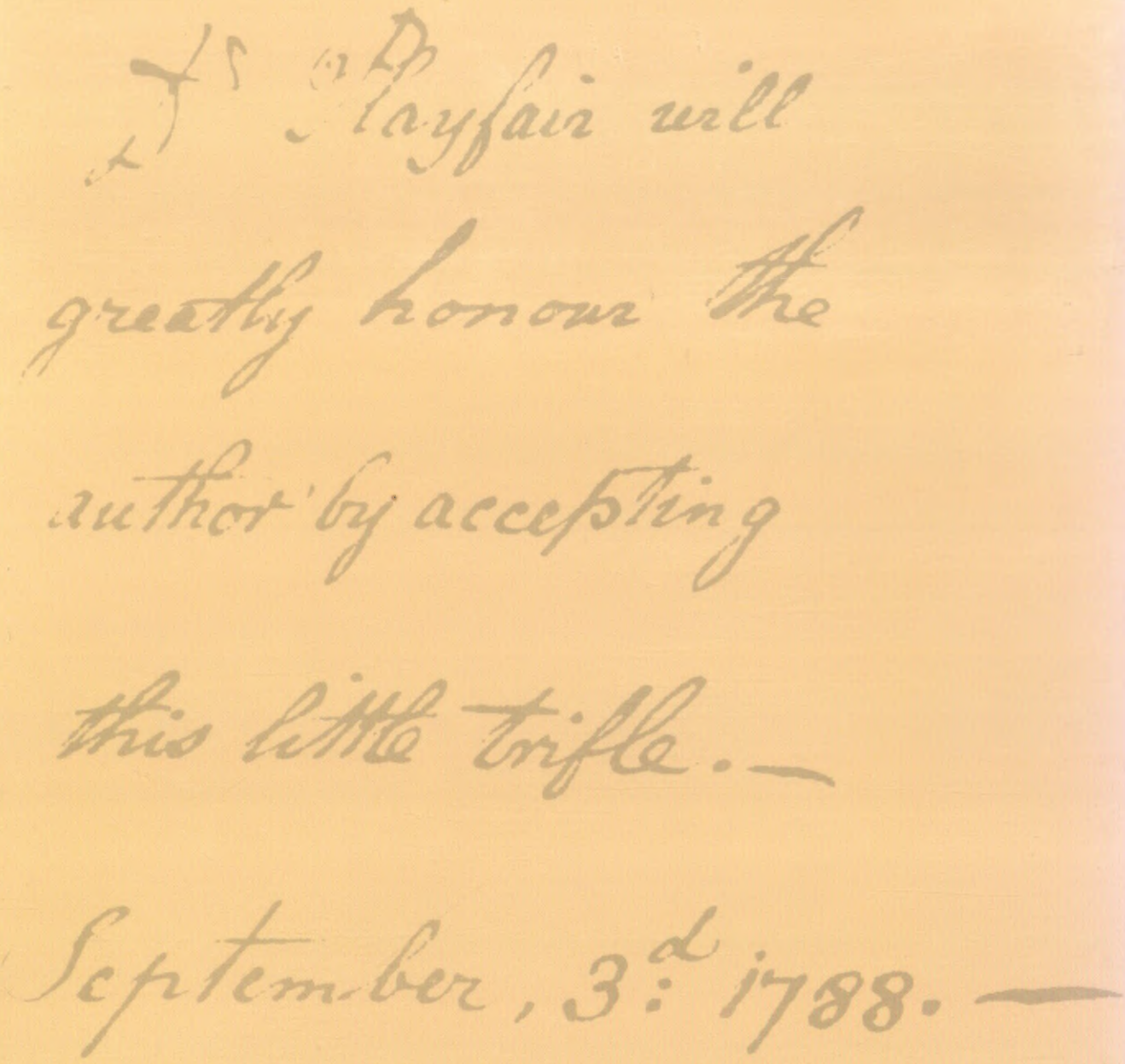
Descendants of Isaac Penington

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